

4—NEREIDAE AND EUNICIDAE OF SOUTH WESTERN AUSTRALIA; ALSO NOTES ON THE ECOLOGY OF WESTERN AUSTRALIAN LIMESTONE REEFS.

BY

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During the course of a systematic study of Polychaete worm fauna along the coast of Western Australia the following relationships were observed and it is felt that their discussion here is of interest in consideration of general habits and geography of the particular groups concerned (viz., Eunicidae and Nereidae).

Methods of Collecting.

Specimens were collected by members of the Zoology Department of the University of Western Australia at definite intervals along a series of transects on the reefs. Rock washings, weed washings and sand washings in formalin were made at each station and relative numbers and families of worms living in different habitats and at different distances from the edge of the reef could be ascertained, together with their relationships to other marine fauna collected.

Relationship to the Reef.

Particular interest was found in reef worm fauna and their relation to the very heavy undercutting of the reefs in these area, a condition found frequently in coastal reefs in Australia. The rocks were, in some parts, heavily impregnated with worm tubes and with the living worms themselves. It seems possible that below datum or low tide level, that is, on the vertical face of the reef, the worms find conditions particularly suitable. This, together with the eroding action of waves, of sand, and of Sargassum weed which grows plentifully in this region, was a contributing factor in the undercutting of the reefs.

On this point S. Gardiner (1902) states : "Polychaeta are the most important borers in corals and rocks and the chief cause of the breaking up of the reef flat"—and further quotes McIntosh : "The action of Tropical Polychaete borers is probably greater than Northern forms and their action on calcareous rocks most destructive in wearing away the rocks."

Destructive action of worms on the reef flat could only be observed in regions well below low water mark, since reef flat constantly exposed would not provide a suitable habitat for sedentary or tubicolous worms and worm fauna in these regions is completely errant, living amongst seaweed.

Tubicolous Polychaetes were also found building up reefs in certain parts. The sheltered north reef of Point Peron is built up entirely of worm tubes. The erection of such friable reef was possible in this region sheltered from the stronger eroding action of the heavier seas on the west side of the Point.

Geographical Distribution.

Augener (1913) has given a full account of the geographical relations of this area. The Indo-Malayan and tropical nature of the fauna is particularly noticeable in all regions as far south as Point Peron, where a warm tropical current in winter keeps the temperature comparatively high and in summer the generally higher temperatures of coastal waters enable a more or less constantly high temperature throughout the year. I have further observed an interesting gradation in the nature of the fauna from north to south along the coast. Eunicidae and Nereidae are the most plentiful families represented in all localities. At Nornalup the Nereids are large and plentiful, while there were only two Eunicidae of about 10 mm. in length. At Point Peron and Rottnest the Nereids and Eunicidae are equally plentiful and of comparable size, while at the Abrolhos Eunicidae are large and Nereidae small (an average of 15 mm. in length), although plentiful.

It is therefore concluded that more tropical waters favour Eunicidae while colder waters in the region of Antarctic current favour the development of Nereidae, which group is, however, also plentifully represented in tropical waters although by smaller forms. This conclusion is confirmed by an observation made by Benham (1921) to the effect that Eunicidae are rare in Antarctic waters.

The total numbers of specimens from the families Nereidae and Eunicidae from all stations are more or less similar. Nereidae, however, were represented by 13 different species, while Eunicidae were represented mainly by *Eunice antennata* and rare specimens of other species. Thus it appears that Nereidae, while such a clearly defined group, are widely variable within their group and flourish under a wide variety of conditions to which they are easily adapted. This is also true of Eunicidae but to a very much lesser extent.

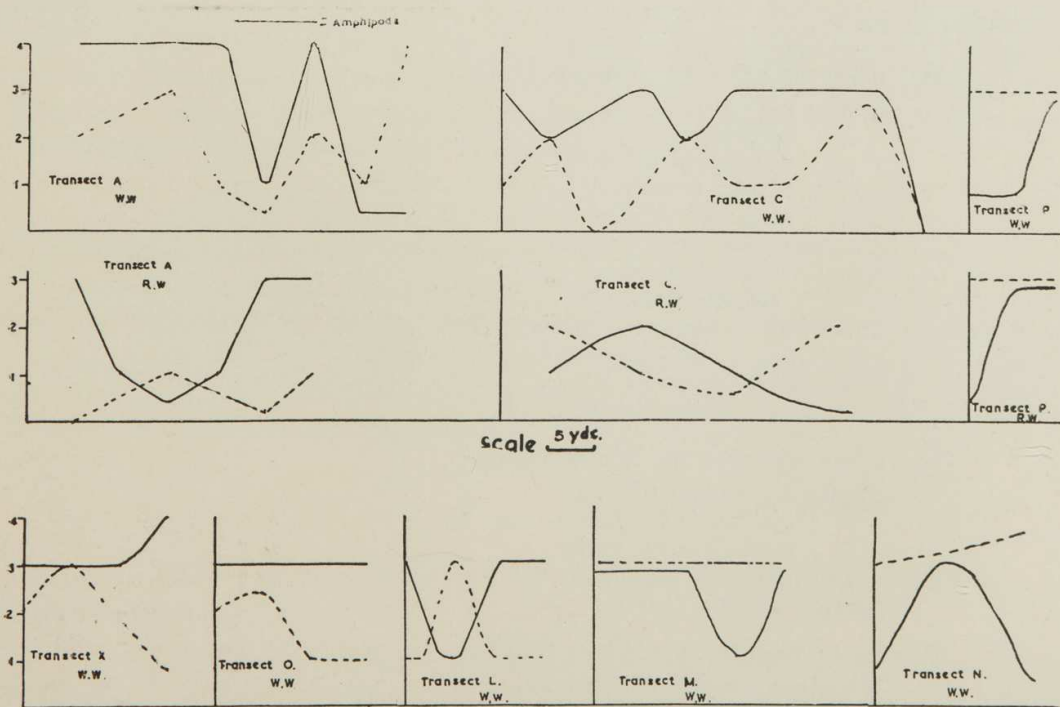
Relation to other Fauna on the Reef.

From graphs (text fig. 1) based on rough arbitrary measures of comparative populations on Point Peron reefs, the number of Polychaetes from rock washings were, where present, equally as plentiful as those collected from weed washings. Not as many washings, however, were made from rock as from weed since it was, in some cases, too hard to break off. This was especially the case in the centre of the reef where the rock had not been weakened by the undercut.

An interesting relationship between Polychaeta and Amphipods stands out very clearly from studies on these reefs. Whether it is of ecological significance or whether it is merely a coincidental relationship is a matter for further investigation. However, the condition was amazingly constant.

Where the population of Amphipods was greatly increased the Polychaete fauna were numerically small and with an increase in Polychaete fauna the Amphipods decreased in number. McIntosh (1910, p. 259) states that: "Nereids (in particular) eat algae, other worms, sponges, and crustacea," which may explain the variations. However, particles found in the pharynx of the worms examined seemed to be seaweed rather than crustacean in nature. Alimentary canals of the crustacea have yet to be examined. The possibility that conditions favouring amphipods were exclusive for Polychaetes seems most unlikely as the weeds were plentiful and, in many places, of similar nature. Nor is the explanation that conditions on the edge of the reef are unsuitable for either group possible since sometimes here the Amphipods are the dominants in the population and at other times the Polychaete fauna are dominant.

In the regions where Polychaete numbers were few in the weed, they showed a marked increase in rock. In the weed and rock there was little difference in the nature of Polychaete fauna, although Nereidae were more plentiful in weeds than in rocks. Other errant families Hesionidae, Syllidae, Amphinomidae, Aphroditidae, Chrysopetalidae, were found, each successive family fewer in number and showing no differences between distribution in weed and in rocks. Sedentaria were obtained mainly from rocks, as affording a firm and permanent base. From submarine light and N70H hauls the majority of specimens were small *Platynereis dumerili*.



Text Fig. 1.

Graphs showing distribution of fauna along reef transects.

List of Western Australian Nereidae and Eunicidae.

Nereidae—

Previously recorded by Augener (1913).

- ?
 au or an → *Nereis ehlersi* Aug. *Australonereis ehlersi* (Aug)
 ✓ „ *augusticollis* Aug.
 × „ *albanyensis* Aug. *Neanthes vaalii* Kbg. (1866) — (Ref. Hartman Catalogue)
 ✓ „ *jacksoni* Kbg.
 × „ *cricognatha* Ehl. *Neanthes cricognatha* (Ehl) „ „ „
 × „ *kerquelensis* McL. *Neanthes kerquelensis* (McI) „ „ „
 × „ *lapinigenis* Grube (syn. *N. costae* Grube) *Ceratonereis costae* (Grube)
 × „ *tentaculata* Kbg. *Ceratonereis mirabilis* Kbg.
 × „ *aeguisetis* Aug. *Ceratonereis aeguisetus* (Aug)
 ✓ *Perinereis amblyodonta* (Schm.)
 ✓ „ *vallata* (Gr.)
 ✓ „ *heterodonta* Grav.
 ✓ „ *variodontata* Aug.
 „ *variodontata* Aug.
 ✓ *Platynereis australis* Schm.
 ✓ „ *dumerilii* Aud. & Ed. → Prob. *P. dumerilii antipoda* Hartman
 ✓ *Pseudonereis rotnestiana* Aug.

Previously recorded by Fauvel (1922):

- ✓ *Nereis denhamensis* Aug.
 ✓ *Pseudonereis anomala* Grav.
 ✓ *Platynereis dumerilii* Aud. & Ed. (L. australis)

Previously recorded by Monro (1938):

- Nereis oxypoda* Marenzeller *Neanthes oxypoda* (Marenzeller)
 × „ *erythraensis* Fauvel *Ceratonereis erythraeensis* Fauvel

Species newly recorded from Western Australia:

- ✓ *Nereis callaona* Grube
 × „ *nichollsi* n. sp. *Pseudonereis anomala* Gravier 1902 (Red Sea)
 ✓ „ *thompsoni* n. sp.

Eunicidae—

Previously recorded by Augener (1913)

- ✓ *Eunice aphroditois* (Pall)
 ✓ „ *antennata* (Sav.)
 ✓ „ *tentaculata* Qfges.
 ✓ „ *tubifex* Crossland
 × „ *siciliensis* Grube *Palola siciliensis* (Grube)
 × *Marphysa furcellata* Crossland *M. mossambica* (Peters)
 × *Lysidice brevicornis* Kbg. *L. ninetta* Audouin + Edwards 1833
 ✓ „ *collaris* Gray. Grube 1870
 { *Lumbriconereis sphaerocephala* Schm. *Lumbriconereis sphaerocephalus* (Schm.)
 { × „ *brevicirra* Schm. *Lumbriconereis brevicirra* (Schm.)
 { × *Stauronereis australis* Hasw. *Dorvillea australis* (Hasw.)
 { × „ *australiensis* McIn. „ *australiensis* (McIn.)

Previously recorded by Fauvel (1922):

- ✓ *Eunice tentaculata* Qfges.
 × „ *siciliensis* Grube — above
 ✓ „ *antennata* (Savigny)
 ✓ „ *australis* Qfges.
 ✓ *Lysidice collaris* Grube

Previously recorded by Monro (1938):

- ✓ *Marphysa sanguinea* (Montagu)

Species newly recorded from Western Australia:

- Eunice denticulata* Webster
 ✓ *Marphysa bifurcata* n. sp.

Relationships of Family Nereidae.

All species recorded below were found associated with one another at different places and there was no definite and constant association between any two or more forms. Platynereids were the most plentiful forms found in weed on the reefs. *Nereis nichollsi*, *Nereis jacksoni*, *Neanthes albanensis*, *Neanthes thompsoni* were relatively more plentiful in rocks. Other forms recorded were comparatively rare.

An arbitrary ratio has been used below to indicate the relative occurrences of the most common forms in rock and weed. It must, however, be noted here that the association between rock living and weed living forms is particularly close, and weed living forms may migrate to excavations made in the rocks by other forms, not necessarily Polychaeta.

The following ratio is used in the table below :—

Number of Stations from which species taken					
				Total Number of Stations from which collections taken	
Species.				In Weed.	In Rock.
<i>Platynereis dumerili</i>	....	....	....	.76	.21
<i>Nereis nichollsi</i>	....	....	....	.12	.14*
<i>Nereis jacksoni</i>	....	....	....	.18	.28
<i>Neanthes thompsoni</i>	....	....	....	.12	.14*
<i>Neanthes albanensis</i>	....	....	....	.24	.36

* This difference, however, in view of the few stations from which specimens were taken is of doubtful significance.

Perinereid, Ceratonereids taken were too few for their habitat to be significant.

These figures can be correlated with the types of jaw armature of the forms concerned. Platynereids are most modified for softer environment with their small paragnaths, while Nereids with large conical paragnaths are more particularly efficient in wearing a path within the limestone reefs. Here they are less subjected to the destructive action of waves which the Platynereids may escape due to smaller size.

Relationships of Family Eunicidae.

One species, *Eunice antennata* Sav., was collected in overwhelming numbers from all stations from which Eunicidae were taken. The comparative reduction of Eunicidae at more southerly stations has been already indicated ; as has other data concerning the few species represented while individuals of the one species were plentiful.

EUNICIDAE AND NEREIDAE OF SOUTH-WESTERN AUSTRALIA.

Classification.

Variability of many characters and their changin from in different stages of contraction and extension of the body render them useless as specific criteria (Crossland 1903). Parapodia and setae are found to be the most dependable characters since environment affecting them is more constant and the latter are not affected by preserving agents (McI. 1885) ; arrange-

ment of teeth in the pharynx is also, within certain limits, a dependable character, although there are certain changes, especially in number of denticles, from place to place, perhaps according to diet. Through the above characters intermediate stages may be traced (*viz.*, discussion below on *Nereis thompsoni* n. sp.; *pelagica* L. and *cultrifera* Grube; McIntosh 1910, p. 256).

Keys to species throughout this work have been prepared with some care to give a reliable means of identification and to provide an overall impression of the variations within the group. The majority of described species, where literature is available, have been included as so many forms are of cosmopolitan nature. Insufficient work has yet been done to know which other forms may yet be proven to be world wide in distribution.

Where possible less variable characters have been used for wider groupings with more variable characters employed for finer specific distinctions. Thus it is hoped that the keys will give some idea of trends within any genus as well as providing useful and practical aids to identification.

Genus **NEREIS.**

Subgenera of this genus are differentiated according to presence or absence of denticles in certain pharyngeal regions. However, as pointed out by Augener, Fauvel and Horst, "a group of paragnaths usually present may, by exception be absent" (Horst 1924) and certain species with other dependable characters in common (*e.g.*, *Neathes thompsoni* n.sp. together with *Nereis heirissonensis* Aug., *jacksoni* Knbg. and *mortenseni* Aug. all have identical and characteristic dorsal falcate setae) differ in the arrangement of pharyngeal paragnaths. Therefore it is maintained that division into subgenera as above does not imply a separation in terms of natural relationship but represents a means of dividing an unwieldy genus into a convenient working subdivision as no other constant character for distinction into subgeneric groups has yet been determined.

The nature of the paragnaths should, where possible, be used for distinctions rather than the presence or absence of paragnaths in any area thus:

Nereis atlantica (McIntosh 1885) has paragnaths on all groups except VI and horny ridges in V. This should relate the form to *Perinereis*. McIntosh believes that it diverges from the latter in lack of paragnaths on VI but in view of the nature of the horny ridges in V it would seem to warrant a new sub-division under Genus *Perinereis*.

Nereis patagonica (McIntosh 1885) also seems to warrant a new sub-genus of genus *Nereis* since there are paragnaths constantly in V and they are lacking in I, II and VI. Also related to this form is *cockburnensis* Augener (1913) which bears paragnaths in V but lacks them Group I. Although genus *Pisonoe* bears teeth in these regions they are typical and unlike characteristically widely separated cones typical of the genus *Nereis*.

Sub-Genus **NEREIS** sensu stricta

KEY TO SPECIES.

Chamberlain (1919) and Fauvel (1923, 1932) have already published keys to this group. The purely European forms of the coast of France have been omitted from this present key. Fauvel's (1923) key and that prepared by Chamberlain should be used as well as the following to completely account for all members of this group. *N. nonhuysi* Horst, a freshwater form, has been omitted from the key.

The reference given, following the specific name, refers to the latest published record to that species and will give further reference to synonymy and descriptions.

- | | | | | | | | |
|-----|---|------|------|------|------|------------------------------------|----|
| 1. | No Eyes | .... | .... | .... | .... | <i>N. typhla</i> | |
| | Eyes | .... | .... | .... | .... | (Monro 1930) | 2 |
| 2. | Simple hooks present | .... | .... | .... | .... | <i>N. onychylochaeta</i> Horst | |
| | | | | | | <i>N. onycophora</i> Horst | |
| | | | | | | (Fauvel 1932) | 3 |
| | No simple hooks present | .... | .... | .... | .... |  | 3 |
| 3. | Spinigerous bristles only present | .... | .... | .... | .... |  | 4 |
| | Spinigerous and falcigerous bristles present | .... | .... | .... | .... |  | 5 |
| 4. | Posterior parapodial lobes normal | .... | .... | .... | .... | <i>N. chringighattensis</i> Fauvel | |
| | | | | | | (Fauvel 1932) | |
| | Posterior parapodial lobes elongated | .... | .... | .... | .... | <i>N. longisetis</i> McIntosh | |
| | | | | | | (McIntosh 1885) | |
| 5. | Dorsal homogomph falcate bristles in post feet | .... | .... | .... | .... |  | 6 |
| | No dorsal homogomph falcate bristles in post feet | .... | .... | .... | .... |  | 20 |
| 6. | No spinigerous bristles in ventral division | .... | .... | .... | .... | <i>N. tydemani</i> Horst | |
| | | | | | | (Horst 1924) | |
| | With spinigerous bristles in ventral division | .... | .... | .... | .... |  | 7 |
| 7. | Terminal piece of dorsal falcate bristle smooth | .... | .... | .... | .... |  | 8 |
| | Terminal piece of dorsal falcate boldly dentate | .... | .... | .... | .... |  | 15 |
| 8. | Dorsal ligule of post feet enlarged | .... | .... | .... | .... |  | 9 |
| | Dorsal ligule of post feet not enlarged | .... | .... | .... | .... |  | 11 |
| 9. | Long dorsal cirrus | .... | .... | .... | .... |  | 10 |
| | Shorter dorsal cirrus | .... | .... | .... | .... | (Ehlers 1901) | |
| | | | | | | <i>N. callaona</i> Grube | |
| 10. | Anteriorly no setose bristles in ventral bundle of ventral division | | | | | <i>N. nicholli</i> n. sp. | |
| | Anteriorly has setose bristles in ventral bundle of ventral division | | | | | <i>N. coutieri</i> Gray | |
| | | | | | | (Fauvel 1932) | |
| 11. | Single row paragnaths in VII., VIII. | .... | .... | .... | .... |  | 12 |
| | More than a single row in VII., VIII. | .... | .... | .... | .... |  | 13 |
| 12. | Paragnaths in group III., dorsal cirrus twice length dorsal lobe | | | | | <i>N. riisei</i> Grube | |
| | | | | | | (Monro 1933) | |
| | Paragnaths in group III., dorsal cirrus only slightly longer than dorsal lobe | | | | | <i>N. eugeniae</i> Kbg. | |
| | | | | | | (Ehl. 1901) | |
| 13. | Group I., II., without paragnaths | .... | .... | .... | .... | <i>N. antillensis</i> McL. | |
| | | | | | | (McL. 1885) | |
| | Group I., II., with paragnaths | .... | .... | .... | .... |  | 14 |
| 14. | Short dorsal falcate bristle blunt toothed | .... | .... | .... | .... | <i>N. pelagica</i> L. | |
| | | | | | | (Fauvel 1923) | |
| | Longer dorsal falcate bristle with curved tip | .... | .... | .... | .... | <i>N. falsa</i> Qfges. | |
| | | | | | | (Fauvel 1923) | |
| 15. | Single row paragnaths on VII., VIII. | .... | .... | .... | .... |  | 16 |
| | More than a single row paragnaths on VII., VIII. | .... | .... | .... | .... |  | 19 |
| 16. | Prostomium notched anteriorly | .... | .... | .... | .... |  | 18 |
| | Prostomium not notched anteriorly | .... | .... | .... | .... |  | 17 |

17.	Dorsal lobe reduced posteriorly	....	....	....	<i>N. jacksoni</i> Kbg. (Fauvel 1932)
	Dorsal lobe not reduced posteriorly	....	....	....	<i>N. denhamensis</i> Aug. (Fauvel 1917)
18.	With paragnaths on VI.	....	....	....	<i>N. kauderni</i> Fauvel (Fauvel 1932)
	Without paragnaths on VI.	....	....	....	<i>N. mortensensis</i> Aug. (Augener 1923)
	<i>(N. mortenseni is synonymous with Ceratonereis falcaria Willey.)</i>				
19.	Length of buccal segment less than twice succeeding segments				<i>N. zonata</i> Malmgren (Monro 1936)
	Length of buccal segment greater than twice succeeding segments				<i>N. fulchalensis</i> Langerhans (Monro 1933)
20.	No heterogomph falcate bristles present	....	....	....	<i>N. batjanensis</i> Horst (Horst 1924)
	Heterogomph falcate bristles present	....	....	....	21
21.	Single row paragnaths on VII., VIII.	....	....	....	22
	More than single row paragnaths on VII., VIII.	....	....	....	29
22.	Only aciculae in posterior feet	....	....	....	<i>N. heteromorpha</i> Horst (Horst 1924)
	Aciculae and other setae present in posterior feet	....	....	....	23
23.	No ventral heterogomph setose bristles	....	....	....	24
	With ventral heterogomph setose bristles	....	....	....	25
24.	Parapodial lobes flagellate	....	....	....	<i>N. longilingulis</i> Monro (Monro 1936)
	Parapodial lobes normal	....	....	....	<i>N. larseni</i> Monro (Monro 1924)
25.	Dorsal division of anterior feet bifid	....	....	....	26
	Dorsal division of anterior feet trifid	....	....	....	27
26.	Dorsal lobe increase posteriorly	....	....	....	<i>N. ruficeps</i> Ehl. (Ehlers 1904)
	Dorsal lobe does not increase posteriorly	....	....	....	<i>N. unifasciata</i> Willey (Fauvel 1932)
27.	Dorsal lobes more elongate posteriorly	....	....	....	<i>N. gisserana</i> Horst (Horst 1924)
	Dorsal lobes unchanged posteriorly	....	....	....	28
28.	Posterior dorsal divisions bifid	....	....	....	<i>N. kerguelensis</i> McL. (Augener 1927)
	Posterior dorsal divisions trifid	....	....	....	<i>N. glandicincta</i> Southern (Fauvel 1932)
29.	With a dorsal tubercle on dorsal border parapodium				<i>N. buitendijki</i> Horst (Horst 1924)
	Without dorsal tubercle on dorsal border parapodium				30
30.	Middle lobe and dorsal setigerous lobe on elongate base				<i>N. talehsapensis</i> Fauvel (Fauvel 1932)
	Middle lobe and dorsal setigerous not on elongate base				31
31.	Dorsal lobe enlarged	....	....	....	32
	Dorsal lobe not enlarged	....	....	....	33
32.	Without heterogomph setose bristles in ventral bundle, ventral division				<i>N. augusticollis</i> Aug. (Augener 1913)
	With heterogomph setose bristles in ventral bundle, ventral division				<i>N. baliensis</i> Horst (Horst 1924)
33.	Falcate appendages short	....	....	....	<i>N. chilkaensis</i> Southern (Fauvel 1932)
	Falcate appendages long	....	....	....	34
34.	Falcate appendages curved	....	....	....	<i>N. indica</i> Kbg. (Fauvel 1932)
	Falcate appendages not curved	....	....	....	<i>N. sunbawensis</i> Horst (Horst 1924)

Inclusion of Horst's species in this key was impeded by incomplete descriptions of prostomium, parapodia and setae of all species.

Nereis nichollsi n. sp.

Text Fig. 2 a—k.



Text Fig. 2.

Nereis nichollsi n. sp.

a—head; b—ventral pharynx (dissected); c—dorsal pharynx (dissected); d—1st parapodium; e—3rd parapodium; f—13th parapodium; g—40th parapodium; h—posterior parapodium; i—dorsal homogomph setose bristle; j—ventral falcate seta; k—dorsal falcate seta.

From weed and rock at the outer edge of the reef ; Rottnest, Pt. Peron, Abrolhos. Thirty-six specimens, Atocous. Length 12–50 mm. ; breadth 1–4 mm. broadest anteriorly. Colour in alcohol from whitish pink to dark brownish pink or green, according to habit. Number of Segments ; 51–63.

Buccal Segment twice length of succeeding segments dorsally and three times their length ventrally. *Prostomium* (text fig. 2a) posterior part bearing the eyes twice as broad as long and with the frontal process and palps forms a square. Not notched anteriorly. *Palps* are large, arise from antero-ventral and latero-ventral region of the posterior part of the prostomium. Basal part is flattened laterally into a circular plate. Terminal appendix spherical. Shape and orientation of the basal part of the palps forms a well marked groove leading to the mouth. *Peristomial cirri* of average length. Postero-

dorsal the longest, reaches to three-fifth setigerous segment. Antero-dorsal four-fifth length of former and both ventral cirri are half the length of the corresponding dorsal cirri. *Eyes* set in a rectangle, anterior pair slightly further apart, contain lenses. In one specimen (text fig. 2a) the anterior pair have become a dispersed pigmentous mass in the prostomium; and in other specimens both eyes have lost their form and are represented by a pigmented area.

Pharynx (text fig. 2b, c). Jaws large and curved, dark brown, about nine teeth on each. Paragnaths large, conical in closely-packed rows; absent in Area V. Arrangement of paragnaths as in text fig. 2b, c.

Parapodia (text fig. 2d-h) extend laterally to a distance equal to one-third of the body width. First parapodium without dorsal lobe and setigerous bundle, ventral and middle lobes extend the same distance laterally and are half as long as the ventral cirrus and one-third as long as the dorsal cirrus. Dorsal lobe and setigerous bundle appear on the third setigerous segment. Here the dorsal cirrus is twice the length of the dorsal lobe and of equal thickness and half the thickness of the middle lobe and the ventral lobe, setigerous lobe and cirrus; the ventral cirrus is shorter than the ventral lobe. Further posteriorly the dorsal lobe extends slightly laterally, the dorsal cirrus is carried to its apex and reaches a maximum length of four times the length of the lobe at fortieth parapodium; the more ventral lobes maintain the same relationships although they are reduced to the same thickness as the more dorsal elements; the ventral cirrus is half as thick (text fig. 2d-g) as long as the ventral lobe at the thirteenth parapodium and thereafter slightly shorter. Anteriorly lobes are rounded with parallel sides, posteriorly they are conical and pointed. The shape of the parapodium changes from a base equal to its lateral extension, at the thirteenth parapodium the base is broader and posteriorly a decrease in the width of the base. Posteriorly gland cells in the lips of dorsal and middle lobes. *Setae* (text fig. 2i-k) anteriorly are dorsal homogomph setigerous bristles, ventral supracular homogomph setigerous and heterogomph falcigerous bristles, and sub-acicular heterogomph falcigerous bristles. Posteriorly are dorsal homogomph falcate setae and ventral supraacicular heterogomph falcigerous setae and sub-acicular heterogomph falcigers and not more than two heterogomph setigerous bristles. The dorsal falcate bristles are never more than three in number and in the middle region of the body they are present with one or two homogomph setigerous bristles.

The tip of the appendix of both the heterogomph and homogomph falcate bristles is not obviously toothed and is only slightly curved. The curved edge is about half the length of the whole appendix and has hairs only on the lower half of its length. The setigerous setae are haired along the whole length of the appendix which is not extremely long and is approximately four times the length of the portion of the appendix articulating with the shaft. The shafts to the falcate setae are twice as thick as those of the setigerous setae.

Relations.—This form resembles very closely *Nereis coutieri* Gravier. The jaws are, however, dissimilar and there are in the latter heterogomph setigerous bristles ventrally in the anterior part of the body. Also in *N. coutieri* the dorsal lobe, as well as carrying on it the dorsal cirrus, has expanded into a round prominence dorsally and the different lobes of its parapodium are more widely separated than the form at present under discussion. The form of the parapodia resembles more closely *Nereis succinea* Leuckart but the dorsal cirrus of *N. succinea* is very much larger, resembling a third lobe.

The appearance of the paragnaths in closely set rows was very reminiscent at cursory examination of the rows of pectinate paragnaths characteristic of Platynereids, except for a relatively larger size. This suggests a possibility that Platynereids, by a fusion of the base of paragnaths are the result of specialisation of the jaw apparatus in the typical nereid form. Further fusion may result in the transverse ridges of Perinereids. McIntosh (1885), discussing *Platynereis tongatabuensis*, remarks that the "Continuous bars in group VII, VIII appeared, under higher magnification, to be separated minute points in compact series." This is also observed in the Platynereids of this collection, suggesting again the origin of pectinate paragnaths from entire and isolated conical teeth.

Nereis jacksoni Kinberg.

(Text Fig. 3 a-r)

Kinberg	1865	<i>Nereis jacksoni</i>
Augener	1913	<i>N. heirissonensis</i>
"	1922	<i>N. jacksoni</i>
"	1924	<i>N. jacksoni</i>

(See notes below on *Nereis jacksoni*.)

Atocous form.—Fifty specimens with *N. denhamensis* Aug. from Rottnest ; large numbers from Nornalup but no specimens of *N. denhamensis* taken from this area. Colour in alcohol pinkish white to deeper pink ; dark brown pigment patches on dorsum of prostomium and palps. Specimens from Rottnest, Point Peron 20–25 mm. long, 1 mm. broad, with about 60 segments. From Nornalup specimens 25–30 mm. long with 60–70 segments.

Prostomium, Palps, Tentacles, Eyes, as described by Augener (1913) for *N. heirissonensis*. Anterior margin of prostomium is not cleft. *Peristomial cirri* extend back to two-third perapodial segment.

Pharynx (text fig. 3 b) has typical small brown paragnaths which do not suggest a transparent or Ceratonereid condition (Augener, 1913). Arrangement of paragnaths is similar although there is a reduction in their numbers in larger Nornalup specimens as follows :—

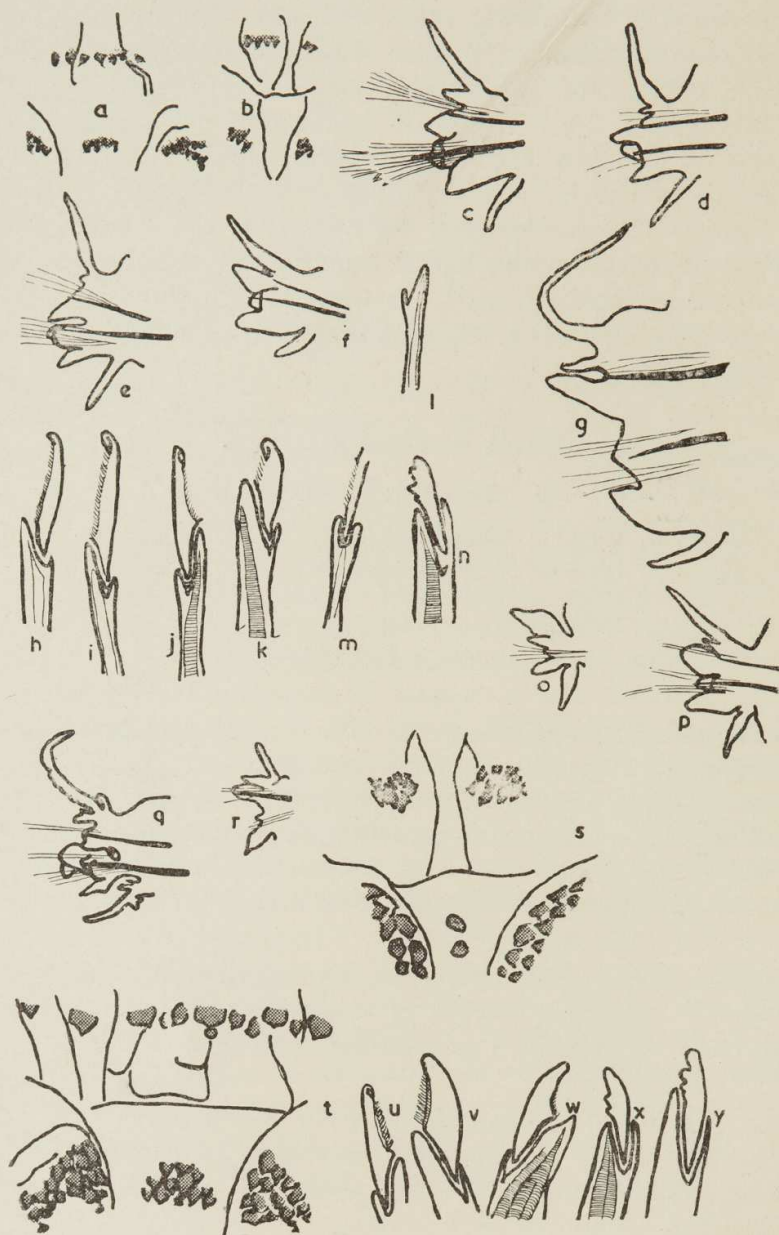
Point Peron-Rottnest :

I.	0
II.	Two oblique double rows of 4-2 paragnaths in each row.
III.	Transverse row of 5
IV.	Crescent of 9 anteriorly and 2-4 posteriorly
V.	0
VI.	Single transverse row of 4
VII., VIII.	Single row of 7 widely spaced.

Nornalup :

I.	0
II.	3 in oblique line
III.	0
IV.	2 curved rows, 3 in each
V.	0
VI.	1
VII., VIII.	A single row of 7 paragnaths

The paragnaths are all of much the same size. This latter condition is identical with that given by Augener (1913).



Text Fig. 3.

Nereis jacksoni Kbg.

a—pharynx ventral; b—pharynx dorsal; c—4th parapodium; d—10th parapodium; e—12th parapodium; f—30th parapodium; g—posterior, from Nornalup variety; h—anterior subacicular falcate seta; i—anterior supra-acicular falcate seta; j—posterior supra-acicular falcate seta; k—posterior sub-acicular falcate seta; l—hetero setose bristle shaft; m—homo setose bristle; n—dorsal falcate seta; o—1st epitocous parapodium; p—9th epitocous parapodium; q—15th epitocous parapodium; r—53rd epitocous parapodium.

N. denhamensis Aug.

s, t—pharynx; u—anterior subacicular falcate seta; v—anterior supra-acicular falcate seta; w—posterior supra-acicular and subacicular falcate seta; x—anterior dorsal seta; y—posterior dorsal falcate seta.

Parapodia.—In first-third setigerous segments appendage lacks a dorsal lobe, the dorsal cirrus is one and a half times the length of the middle and ventral lobe and the ventral cirrus slightly shorter ; lobes round with parallel sides. At tenth parapodium the dorsal lobe attains maximum length of half the middle and ventral lobes, the dorsal cirrus twice the length of the latter two lobes and the ventral cirrus of equal length ; the lobes have become conical and pointed (text fig. 3d, e) more posteriorly the dorsal lobe gradually diminishes until it disappears entirely at about segment 35 in Rottnest and Point Peron specimens (text fig. 3f) but remains as a small projection half the length and thickness of the middle. This latter is the condition described by Augener (1933) for *N. heirissonensis* (text fig. 3g). *Setae*.—Anteriorly dorsal homogomph spinigerous bristles (text fig. 3m), ventral supracicular heterogomph falcigers (text fig. 3i) and subacicular heterogomph spingers (text fig. 3l). Posteriorly the spingerous bristles of the dorsal bundle are replaced by two, rarely three, homogomph falcigers with four teeth along their curved border ; the two proximal to the shaft are fine and hair-like. The ventral falcate setae are haired along the curved edge of the appendix, those of the supracicular longer than the subacicular and both types longer and narrower anteriorly. Setae are most plentiful anteriorly. Augener (1913) describes ventral acicular setae as outnumbering spinigerous bristles but this is not so in these specimens. Constant differences in the pharynx and parapodia of specimens from Point Peron, Rottnest and Nornalup show the latter forms as intermediate stage between *N. denhamensis* Aug. and *N. jacksoni* Kbg., as will be discussed below.

Epitocous form.—Two epitocous specimens of *N. jacksoni* were collected with the atocous forms and, as far as can be ascertained, are the first recorded epitokes of this form. They were both small, 15–20 mm. and 1 mm. in breadth. The prostomium was not markedly changed in any way, except for the eyes which were enlarged greatly though the eyes on either side of the head were not quite contiguous. The eyes were of a dark brown colour, almost black. The body was divided into three regions. The anterior atocous region reached to the fourth parapodial segment. The epitocous region extended thereafter for 36 segments and 44 segments respectively in the two specimens, and the posterior region was once again atocous, occupying 19 segments. The first parapodium (text fig. 3o) was identical with the same parapodium of the atocous form described above, except for enlargements in the dorsal and ventral cirri. These enlargements persisted in the first 34 parapodia but in the seventh parapodium the cirri had assumed a more slender and usual form and the whole parapodium entirely resembled that of the same region of the atocous form. The dorsal lobe first appears at the fourth parapodium. On the twelfth parapodium the middle and ventral lobes have become thicker and foliaceous and on the fourteenth segment the typical epitocous form has commenced. The epitocous appendages (text fig. 3r) are fundamentally constant throughout that region, changes taking place only in the size of the foliaceous outgrowths of the lobes, which increase posteriorly. The

dorsal cirrus becomes very long, about four times the length of the dorsal lobe which reaches laterally as far as the setigerous and ventral lobes. The ventral cirrus is slightly longer than the ventral lobe. The middle lobe extends ventrally and laterally in a large fan-shaped outgrowth. The ventral setigerous lobe extends dorsally and laterally in a similar outgrowth which overlaps the former. The ventral lobe gives off ventrally an elongate finger-like process arising dorsally from its base and posteriorly becoming double, also a ventral arborescent outgrowth of two limbs. At the twenty-second parapodium, the dorsal cirrus has small and numerous sacculations along the ventral surface and single finger-like processes dorsally from dorsal lobe and dorsal cirrus respectively. The dorsal lobe progressively diminishes posteriorly. At the fiftieth segment the epitocous parapodia cease and the atocous form is resumed. There is here a total loss of the dorsal lobe and the middle lobe is considerably reduced. The dorsal cirrus is not as long as the atocous from this region of the body and has an enlargement similar to that of the first parapodium.

The setae of the atocous parapodia, particularly the sturdy falcate setae show a tendency to remain with the epitocous setae in the epitocous region of the body. There is at least one example of each seta usually to be found in each setigerous lobe, with the exception of heterogomph bristles in the ventral supracicular group where they are absent in the more posterior epitoke segments. (There is an absence of these setae in this group noted by Augener (1913) in describing *N. denhamensis*). The typical dorsal homogomph falcate bristles appear in segment 15. At the fiftieth segment the epicous bristles are lost and the setae of the posterior segments of the atocous parapodia are left as described above.

The pharynx agrees in all groups, with that of the atocous form. There is noted, however, a tendency for reduction in some of the groups. Whether this is a change concurrent with the epitocous state or whether it is due to an early maturity or is merely an individual variation, cannot be ascertained with the small number of specimens available for examination. This reduction involves, in II, a single oblique row of three paragnaths in place of longer double rows; in group III only three paragnaths in a transverse row. All other groups are identical with the previously described atocous form.

There are some specimens of this form which, although not epitocous, were filled with eggs. The epitocous form is not always developed with sexual maturity. The posterior atocous region of the epitocous specimen may possibly be due to regeneration but this cannot be ascertained until further specimens can be examined. However, this condition was constant in the two available epitokes and the parapodia of this region are well formed, with a definite decrease in the size of the epitocous segments posteriorly and a gradual change to atocous parapodia.

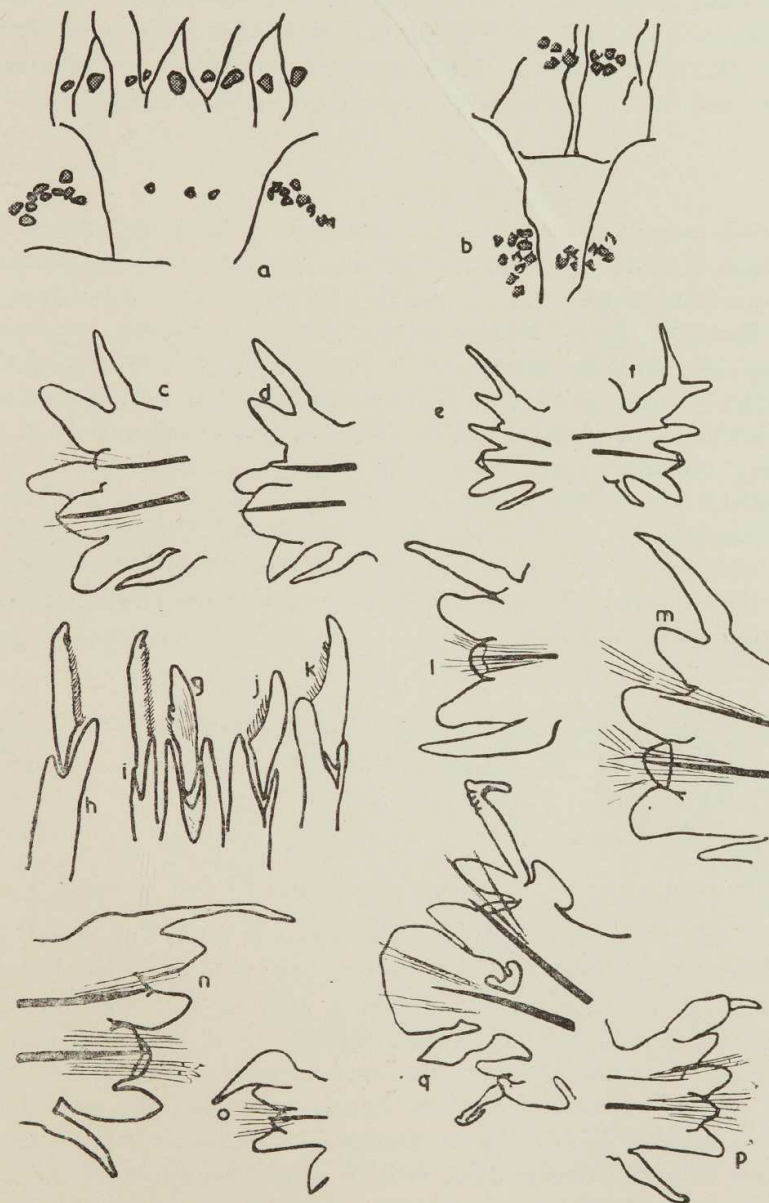
Nereis denhamensis Augener.

(Text figs. 3 s-y ; 4 l-q)

Augener 1913 *N. denhamensis*

Fauvel 1917 *N. denhamensis*

(See discussion below on *N. jacksoni*.)



Text Fig. 4.

Nereis callaona Grube.

a, b—pharynx; c—8th parapodium; d—52nd parapodium; e—56th parapodium; f—67th parapodium; g—dorsal falcate seta; h—anterior subacicular falcate seta; i—anterior supra acicular falcate seta; j—posterior sub acicular falcate seta; k—posterior supra acicular falcate seta.

N. denhamensis Aug.

l—1st parapodium; m—8th parapodium; n—34th parapodium; o—2nd epitocous parapodium; p—6th epitocous parapodium; q—34th epitocous parapodium.

Atocous form.—Sixty specimens from Point Peron and Rottnest. Length 15-60 mm., breadth 1.5-4 mm., with 70-80 segments. Colour in alcohol from white to dark pinkish brown with brown pigment spots on dorsum of prostomium and on the palps.

Prostomium, palps, tentacles as previously described. *Peristomial cirri* sometimes reach back to the 4th setigerous segment. *Pharynx* (text fig. 3 s.t.) differs from that of *N. jacksoni* Kbg. in greater number of paragnaths present in all groups and in the shape of groups III, IV, VI; as described by Fauvel 1917.

Parapodia (text fig. 4 l-n) lobes generally more rounded than the corresponding lobes of former species, becoming pointed only at about the 20th parapodium. The middle lobe is slightly longer than the ventral lobe. The dorsal lobe is equal to the middle lobe at about setigerous segment 8 and at 34th segment is definitely longer, while posteriorly it is only slightly reduced. Dorsal cirrus is as long as that of *N. jacksoni* Kbt. but is not carried out along the dorsal lobe. The ventral cirrus reduced posteriorly to half the ventral lobe. *Setae* more numerous than preceding species and with a thicker shaft and appendix; the latter much shorter (text fig. 3 u-w). There is not a marked differentiation in the length of supra and sub-acicular falcate appendices although the former is thicker. Posteriorly both are similar. Four falcate bristles appear anteriorly in the dorsal bundle replacing spinigerous setae at about segment 30.

Epitocous form.—Two specimens measuring 20 and 28 mm. in length by 2 mm. in breadth. The prostomium and prostomial appendages show no change. The eyes are large but not contiguous and are coloured dark brown. The body consists of two regions only, anterior atocous and posterior epitocous regions. The epitocous segments begin at the 15th parapodial segment and continue to the end of the body, occupying 53 segments. The first parapodium is similar to that of the atocous form but dorsal and ventral cirrus are greatly enlarged and are almost oval shaped. In the second parapodium (text fig. 40) the ventral cirrus is smaller but the dorsal cirrus has increased to twice the length of the middle lobe, the enlargement is now localised to the basal half and is prominent dorsally. In the sixth parapodium (text fig. 4 p) the ventral cirrus has become slender, the dorsal cirrus twice the length of middle lobe with a sausage-like enlargement on its basal two-thirds. Here also the dorsal lobe (which appeared first on the third parapodium) has attained the length of the middle lobe. At the eight parapodium the enlargement on the dorsal cirrus has disappeared and the parapodia are typical of the atocous form with more rounded lobes than those of *N. jacksoni*; on the fifteenth parapodium the change to epitocous form takes place. The epitocous parapodia undergo no changes (text fig. 4 q) in the rest of the body except for an increase in the size of lobes and their outgrowths until the fiftieth segment when foliaceous outgrowths begin to decrease in size. The dorsal cirrus of the epitocous parapodium is three times the length of the dorsal lobe. It has prominent sacculations along its ventral border and at the end of its basal two-thirds bears a prominent knob causing the remaining third of the cirrus to turn dorsally. From the base of the cirrus is a dorsal fan-shaped outgrowth which is absent in *N. heirissonensis*. The

dorsal lobe is unchanged and maintains the same proportions throughout, reaching as far laterally as the middle lobe (as in the atocous form). The middle lobe bears a fan-shaped projection ventrally (as in the epitoke of *N. jacksoni*) overlapping the dorsal part of the large fan-shaped outgrowth around the end of the ventral setigerous lobe. This last named foliaceous outgrowth extends beyond the middle lobe and also ventrally while in *N. jacksoni* it extends laterally only as far as the middle lobe and does not extend ventrally. The ventral lobe bears no epitocous outgrowths ; thus the large foliaceous outgrowth of the more dorsal components of *N. denhamensis* epitoke cannot be accounted for by a consideration of this as a more mature condition than *N. jacksoni* since the latter bears a considerable outgrowth on the ventral lobe. The ventral cirrus extends beyond the ventral lobe and bears a dorsal finger-like process and a ventral fan-shaped process in place of the bilobed arborescent formation of *N. heirissonensis*. On the ventral cirrus of the thirty-fourth parapodium and a few succeeding parapodia there are sacculations similar to those found on the dorsal cirrus. Atocous setae are retained in all parapodia, though considerably reduced in number, in addition to the epitocous setae. The arrangement of paragnaths in the pharynx is similar to that in the atocous form with, however, fewer paragnaths and a total loss of paragnaths in group III. The differences between the epitocous parapodia of this and *N. jacksoni* are as great or, in some cases, greater than the differences between the epitokes of other specific forms. So definitely, if species are to be defined by the characteristics now in use, *N. jacksoni* and *N. denhamensis* are not directly synonymous.

Notes on N. jacksoni Kbg., *N. denhamensis* Aug. and *N. heirissonensis* Aug.

N. denhamensis and *N. heirissonensis* were first described as such by Augener (1913). In 1922 he established their synonymy with *N. jacksoni*, basing his argument on the similarity of setae found in the three forms. There is no explanation of the fact that *N. heirissonensis* and *N. jacksoni* show marked contrast to *N. denhamensis* in the form of the parapodial lobes and in the pharyngeal armature (see account of *N. denhamensis* above). Other species, differing only in characters generally recognised as more variable than these and yet with similar setae are regarded as separate species (see *N. kauderni*, *N. mortenseni*) ; therefore on the basis of this and above arguments, *N. jacksoni* and *N. denhamensis* are in the present work maintained as two distinct species.

***Nereis calloana* Grube var. *peroniensis* n. var.**

(Text fig. 4 a-k.)

Ehlers 1901 *N. callaona*

Three specimens with *N. jacksoni* from Point Peron. Colour in alcohol pinkish cream to dark brown. Length 30-50 mm., breadth 2-3 mm. Segments number 70-72.

Prostomium, *palps*, *tentacles*, *eyes* of general form. *Persistomial cirri* extend to second parapodial segment.

Pharynx is similar to that of *N. jacksoni* (text fig. 4 a, b).

Parapodia (text fig. 4 c-f) differ from previous descriptions in length of dorsal cirrus and types of setae and justify a new variety. Dorsal lobe first appears in the second parapodium; setae of the dorsal bundle appear in the third parapodium. At the eighth parapodium (text fig. 4 c) the dorsal cirrus is shorter than the dorsal lobe but after about four segments increases in length till at the thirty-first segment it is one and a half times the length of the dorsal lobe; further posteriorly it is carried out along the dorsal lobe which itself has increased to twice the length of middle and ventral lobes. Also in the latter region the lobes are more narrow and finger-like (text fig. 4 e, f). The dorsal cirrus of *N. callaona* Grav. described by Ehlers (1901) is twice the length of the dorsal lobe all along the body. Setae (text fig. 4 g-k) dorsally are spinigerous homogomph setae replaced by homogomph falcigers posteriorly; the latter are short, thick, with slight curve along which they are haired (differing from *N. trifasciata*, which has small denticle along this curved border). Supra acicular homogomph spinigerous setae, heterogomph falcigerous setae and subacicular heterogomph falcigers and spinigers. Setae of ventral bundles, anteriorly are long, slender and haired along their entire border except in the case of falcigers which are naked at the tip and slightly curved (falcigers of *N. Callaona* Grav. (Ehlers 1901) are haired basally only). Further posteriorly the hairs along the curved border of the falcigers have receded further from the tip (N. *trifasciata* Fauvel 1919 have the hook bent at right angles to the shaft).

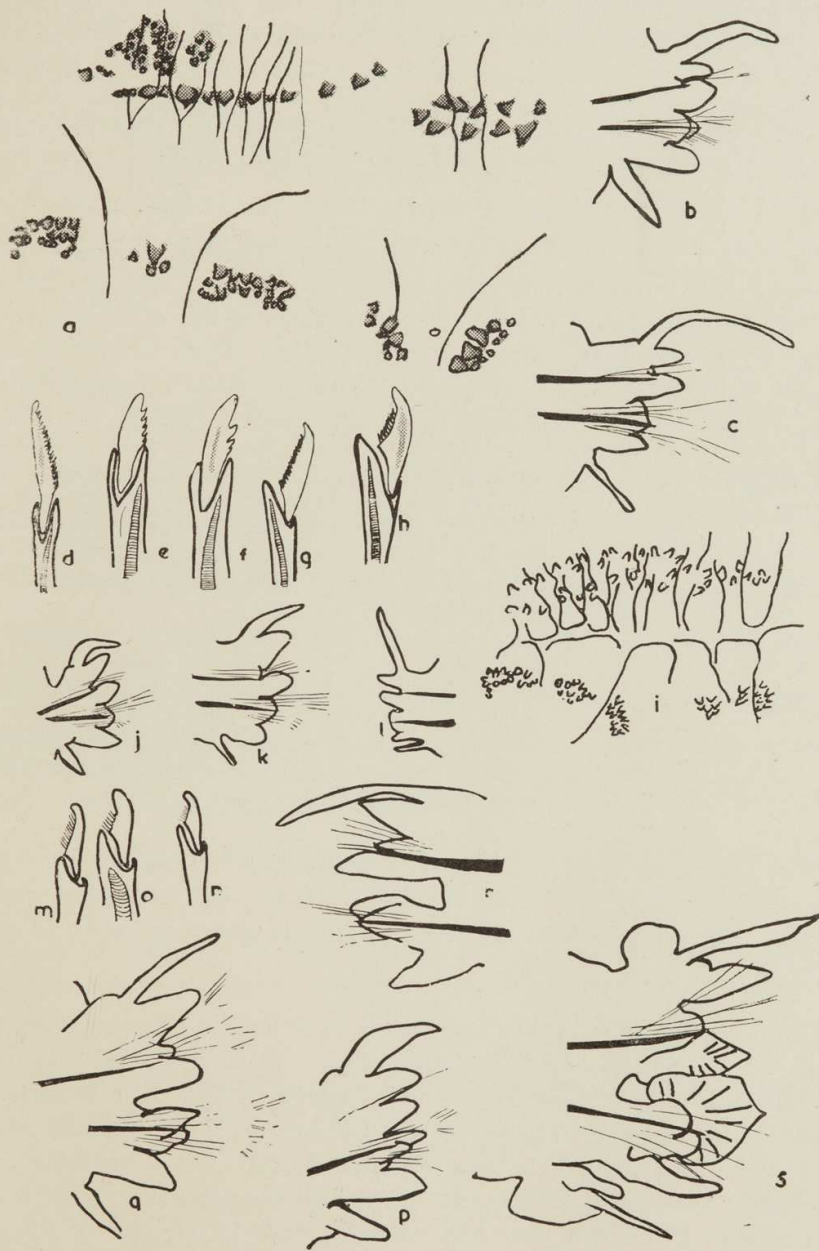
Sub-Genus **NEANTHES.**

KEY TO SPECIES.

- | | | | | | | | |
|----|--|------|------|------|------|------|--|
| 1. | Eyes present | .... | .... | .... | .... | .... | 2 |
| | No eyes | | | | | | <i>N. abyssicola</i> Horst
(Horst 1924) |
| 2. | With falcate setae | .... | .... | .... | .... | .... | 3 |
| | Without falcate setae | | | | | | <i>N. oxypoda</i> Marenz.
(Monro 1938) |
| 3. | No heterogomph setose setae | | | | | | <i>N. cricognatha</i> Ehl.
(Augener 1927) |
| | Has heterogomph setose setae | .... | .... | .... | .... | .... | 4 |
| 4. | No hetero falcate setae in ventral supra acicular bundle | | | | | | <i>N. latipalpa</i> Willey
(Willey 1904) |
| | Has hetero falcate setae in ventral supra acicular bundle | .... | .... | .... | .... | .... | 5 |
| 5. | No heterogomph setose setae in ventral acicular bundle | .... | .... | .... | .... | .... | 6 |
| | Has heterogomph setose setae in ventral acicular bundle | | | | | | <i>N. vancauria</i> Ehl.
(Ehl.) |
| 6. | Enlargement of dorsal lobe posteriorly with dorsal cirrus at extremity of lobe | | | | | | <i>N. succinea</i> L.
(Monro 1933) |
| | Dorsal cirrus never at extremity of lobe | .... | .... | .... | .... | .... | 7 |
| 7. | Dorsal cirrus never longer than dorsal lobe | | | | | | <i>N. operta</i> St.
(Day 1934) |
| | Dorsal cirrus always longer than dorsal lobe | .... | .... | .... | .... | .... | 8 |
| 3. | Dorsal cirrus never twice as long as dorsal lobe; anterior lobes rounded, post lobes conical | | | | | | <i>N. capensis</i> Willey
(Willey 1904) |
| | Dorsal cirrus at least twice as long as dorsal lobe | .... | .... | .... | .... | .... | 9 |
| | Dorsal lobe triangular, others finger-like | .... | .... | .... | .... | .... | <i>N. thompsoni</i> n. sp. |
| 9. | With dorsal homogomph falcate setae | | | | | | <i>N. albanyensis</i> Aug.
(Fauvel 1917) |
| | Without dorsal homogomph falcate setae | | | | | | <i>N. vaali</i> Kbg.
(Aug. 1927) |

Nereis (Neanthes) thompsoni n. sp.

(Text fig. 5 a-h.)



Text Fig. 5.

Neanthes thompsoni n.sp.

a—pharynx; b—anterior parapodium; c—posterior parapodium; d—anterior dorsal falcate bristle; e—middle dorsal falcate bristle; f—posterior dorsal falcate bristle; g—posterior subacicular falcate bristle; h—posterior supra acicular falcate bristle.

Nereis albanyensis Aug.

i—pharynx; j—4th parapodium; k—10th parapodium; l—50th parapodium; m—anterior supra acicular falcate seta; n—posterior supra acicular falcate seta; o—posterior supra acicular falcate seta.

Ceratonereis costae Grube.

p—1st epitocous parapodium; q—12th atocous parapodium; r—posterior atocous parapodium; s—epitocous parapodium.

Forty-seven specimens were collected from Rottneest, Point Peron and from Aldritch's Cove, Nornalup. Size of specimens collected varies from 10-30 mm. in length and are 3-1 mm. broad. Segments number 65-70. The colour of the preserved specimens varies from pinkish brown to a pale whitish yellow.

Prostomium, with palps and tentacles bears similar relationships to those found in *N. jacksoni*. *Peristomial cirri* reach back to the fourth to fifth parapodial segments.

Pharynx (text fig. 5 a) is diagnostic for the species. There is great variability in the size of teeth of a single individual. All groups of paragnaths except those mentioned below resemble those of *N. albanyensis* Aug. Group VII and VIII, however, consist of a very wide girdle of paragnaths of varying size, and Group III contains only four paragnaths arranged in the shape of a cross. Below is a summary of pharyngeal armature.

- | | |
|-------------------|--|
| Group I. | 1 or 2 paragnaths, one behind the other. |
| Group II. | 2 oblique parallel rows diverging posteriorly in the everted pharynx. Paragnaths of the more lateral row at least half the size of those in the medium rows. |
| Group III. | 4 arranged in a cross with 3 small paragnaths anteriorly and one posteriorly. |
| Group V. | Fairly large paragnaths arranged in a triangle, apex directed anteriorly. |
| Group VI. | 4 paragnaths of the same size as those of Group V., arranged at the four corners of a square. |
| Group VII., VIII. | A continuous girdle of small irregularly arranged paragnaths about 6 deep with a well defined single row of alternating large and small paragnaths anteriorly. |

The pharynx of this species corresponds in some parts to that of *N. zonata-persica*. Marked differences, however, are observed in areas V, VI and III. The pharynx of *Nereis pelagica* is also similar but differs in areas V, III, IV.

The anterior parapodia (text fig. 5 b) exhibits a dorsal cirrus, a little more than twice the length of the dorsal lobe. The dorsal lobe is finger-like, half the thickness of and reaches as far laterally as the middle lobe. The middle lobe is slightly thicker than the ventral lobe which extends laterally slightly further than the former. The ventral cirrus is not as long as the ventral lobe. More posteriorly (text fig. 5 c) the dorsal surface of the parapodium has increased in length and the dorsal cirrus is carried out along the dorsal lobe. The lobes are narrower than anteriorly with more pointed tips, although they remain finger-shaped. The middle lobe maintains its length laterally but has decreased its thickness to equal that of the dorsal lobe. The ventral setigerous lobe and the ventral lobe now extend only half the distance laterally as the middle lobe. The ventral cirrus is slender and as long or perhaps longer than the ventral lobe. The dorsal cirrus here is three or four times the length of the dorsal lobe. In this character the forms of the parapodia deviate from those of *N. denhamensis*, which in other ways are very similar.

Setae (text fig. 5 d-h) are not very distinctive. They are similar to those found in *N. denhamensis*, *N. jacksoni*, etc. and show a gradation along the body from one to other types ; and so are, in this species of particular interest in determining the relationships of other species. Their distribution is as follows :

In the anterior parapodia there are dorsal homogomph spinigerous bristles, ventral supra and sub-acicular heterogomph falcate bristles and supra acicular homogomph spinigers and sub-acicular heterogomph spinigers. The ventral heterogomph falcate bristles are of the general form already recorded for *N. jacksoni* with longer appendages anteriorly and in the supra acicular group ; becoming shorter and thicker in the sub-acicular bundle and more so posteriorly. They are haired almost to their obtusely bent tip. In the dorsal bundle more posteriorly there appears heterogomph falcate setae, haired in the basal two-thirds with an obtusely bent tip. The form is similar though slightly more exaggerated than the posterior ventral falcate setae. In the middle of the body the haired region of the dorsal falcate seta has become dentate. The denticles number about five and illustrate a gradual condensation of the hairs into hooks towards the posterior end of the body ; especially since more posteriorly the denticles become thicker and fewer in number until the falcate appendix resembles closely or is identical with that of *N. jacksoni* or *N. mortenseni* and bears three denticles. In view of the striking resemblance in these posterior dorsal falcate setae and the fact that the paragnaths are similar, it is comparatively simple to interpret these forms as a stage previous to the differentiation of *N. denhamensis* by loss of some paragnaths in V, VII, VIII and a reduction of the dorsal cirrus ; from which *N. jacksoni*, by the reduction of the dorsal lobes, may have been derived.

Fauvel (1917) mentioned the similarity between *N. zonata* and *N. jacksoni*, the main difference occurring in the pharynx. In *N. thompsoni*, the pharynx bears a closer relationship to *N. zonata*. These arguments lead to the conclusion that there is close relationship between *N. jacksoni*, *N. denhamensis*, *N. zonata* and *N. thompsoni*.

There were no epitokes amongst the collection but a number of mature forms filled with eggs.

Amongst the collection is one specimen of average size, incomplete posteriorly and bearing, in place of the paired prostomial tentacles, a single median tentacle.

Following is a table comparing described sub-species of *N. zonata* with *N. pelagica*, *N. thompsoni* and *N. denhamensis*.

<i>N. thompsoni.</i>	<i>N. zonata-procera.</i>	<i>N. zonata-persica.</i>	<i>N. pelagica.</i>	<i>N. denhamensis.</i>
PHARYNX.				
1 = 1 or 2 V = 3 in triangle VI = 4 large teeth in square VII, VIII = wide band	1 = 2 or 1 V = 0 VI = oval of 6 to 10 small paragnaths VII, VIII = wide band	1 = 1 or 2 V = 0 VI = oval of 6 to 10 small paragnaths VII, VIII = wide band	1 = several V = 0 VI = 4 large in square VII, VIII = wide band	1 = 1 or 2 V = 0 VI = triangle of large parag- naths VII, VIII = single row
SETAE.				
Dorsal falcate, seta dentate with hairs an- teriorly den- ticles posteriorly	Dorsal falcate, seta dentate with stiff pointed hair- like denticles	Dorsal falcate, seta with den- ticles and some- times hair-like denticle basally	Dorsal falcate, seta smooth	Dorsal falcate, seta dentate with dentate setae

Nereis (Neanthes) albanyensis Aug.

(Text fig. 5 i-o.)

Fauvel 1917

N. albanyensis Aug.

Sixty specimens from sand, rock and weed at Point Peron. Size generally small, length 10–20 mm.; maximum breadth at anterior segments 2 mm., 50–56 segments. Colour of preserved specimens brownish white or pink with increased intensity of colour anteriorly on the prostomium.

Prostomium twice as long as the buccal segment and twice as long as broad. *Eyes* vary from large brown circles with prominent lenses to small black spots without obvious lenses. *Peristomial* cirri reach to about fourth segment (as Fauvel 1917, not Augener 1913).

Pharynx (text fig. 5i) agrees with description by Augener (1913) but differs from descriptions of Fauvel (1917) in Group II in which the latter's specimens had a triangular arrangement.

Parapodia (text fig. 5j-l). Anterior dorsal cirrus slightly longer than other lobes; ventral cirrus half the length of the ventral lobe. At the eighteenth segment the dorsal cirrus is one and a half times the length of the dorsal lobe, which extends laterally beyond the middle and ventral lobe. Further posteriorly the dorsal cirrus is carried out along the dorsal lobe and is one and a half times as long as the latter. Ventral cirrus is equal to the length of the ventral lobe. The lobes change little in shape, becoming slightly more pointed and thinner posteriorly; they have gland cells in their tips, and these are sometimes present in the base of the parapodia also, becoming more marked posteriorly. *Setae* (text fig. 5m-o). Homogomph spinigerous setae in dorsal and ventral supracicular bundles, heterogomph spinigers in ventral sub-acicular bundle and heterogomph falcigerous setae in both ventral bundles; smallest falcigers in the sub-acicular bundles and falcigers from both bundles become shorter and thicker posteriorly with the hairs on the curved border gradually receding to the base (Fauvel 1917). Augener (1913) described falcate setae similar to those found anteriorly but appears to have ignored those found posteriorly. This is supported by the fact that Augener describes only the condition of ventral cirrus found in these specimens anteriorly.

Nereis (Neanthes) cricognatha Ehl.

Augener 1927

N. cricognatha.

Seven specimens were collected from Point Peron.

Segments number from 50–60 in animals of 20 mm. length. The body measures 1 mm. in breadth and each parapodium equals in breadth the anterior segments. Posteriorly the parapodia increase relative to the width of the segments. The peristomial cirri reach to the eighth and ninth segment. The form of the parapodia and the arrangement and form of setae agree with the account given by Augener (1913) as does also the arrangement of the paragnaths in the pharynx. There were no epitocous forms collected.

Sub-Genus **CERATONEREIS**.

Nereis (Ceratonereis) costae Grube.

(Text fig. 5 p-s ; 6 j-l.)

Augener 1913 *C. lapinigenis* Grube

Two specimens—one epitocous, one atocous, from Rottnest in association with *N. albanyensis* Aug. Size 30 mm. long, 3 mm. broad.

Atocous form.

Prostomium, palps, eyes, pharynx described by Augener (1913). *Setae* of similar form as those of *N. albanyensis* (text fig. 6j-l).

Epitocous form.

Eyes enlarged.

Parapodia.—The first 14 setigerous segments are atocous but the dorsal cirrus of the first six parapodia (text fig. 5 p-s) show elongate enlargements in the basal two-thirds. Epitocous parapodia are as follows :—

A large outgrowth appears dorsally at the base of the ventral cirrus. A thickening forms along the dorsal cirrus. A large fan-shaped vascular outgrowth develops from the end of the middle lobe and from the anterior lip of the ventral setigerous lobe. From the base of the ventral cirrus ventrally is a fan-shaped outgrowth, while dorsally a finger-shaped process forms (text fig. 5p, s).

The *Pharynx* of the epitocous form agrees with descriptions given by Augener (1913) and Fauvel (1923) and bears also a single paragnath in group I. This latter paragnath was recorded by Grube (1869) for the synonym *N. fasciata* but Fauvel (1919) considers it to be exceptional. I could find no differences between this form and *N. lapinigenis* Grube as remarked by Fauvel (1919).

Nereis (Ceratonereis) tentaculata Kbg.

(Text fig. 6 m-p.)

Day 1934 *N. (Ceratonereis) mirabilis*.

Augener 1913 *N. (Ceratonereis) tentaculata*.

Three specimens from Rottnest Island in damaged condition. Size approximately 30 mm. in length, 2–3 mm. broad, 62 segments. Colour in alcohol a whitish yellow.

Description of prostomium, prostomial appendages, peristomial cirri and parapodia given by Augener (1913) agrees entirely with these specimens.

Pharynx (text fig. 6 m, n, o).

Setae (text fig. 6 p) differ slightly from Augener's descriptions. Dorsally homogomph spinigers. Ventrally homogomph spinigers and heterogomph falcigers in the supra acicular bundle ; in the sub-acicular bundle heterogomph falcigers and about three heterogomph spinigers. Posteriorly the dorsal

bundle supports homogomph faligers as well as spinigers. Form of the setae constant throughout. See Ehlers (1887) but not as described by Horst (1924) for this species; falcate setae are similar whether from anterior, posterior, dorsal or ventral bundles; appendages are long, parallel sides, the falcate curved edge haired almost to the terminal strongly-curved tip (*N. cricognatha* Ehl.).

***Nereis (Ceratonereis) erythraensis* Fauvel.**

Monro 1938 *N. (Ceratonereis) erythraensis*.

There is one specimen collected in weed from Point Peron. The preserved specimen is a whitish yellow colour with brown pigment dorsally. The specimen measures 30 mm. long, has 70 segments.

The longest peristomial cirrus reaches back to the sixth parapodial segment. The buccal segment is large and forms a large bay about the mouth. Falcate setae are absent in the first few anterior segments, appear at the tenth segment in the supra-acicular ventral bundle and at the thirtieth segment are plentiful in both ventral bundles. The acicular setae are not dentate.

Full description agreeing with this specimen has been given by Fauvel (1919). Monro (1938) discusses the synonymy of this form with *N. aequisetis* Aug. At present, since it seems hardly possible that Augener could have overlooked what are very obvious components of the parapodial armature, the two forms have been regarded as different species.

Genus **PLATYNEREIS.**

More synonymy exists perhaps in this group than in any other genus of Nereidae. This makes the formation of keys a particularly confusing work. There follows a summary, giving the arguments of past workers for the lumping together of certain species originally described as distinct.

Synonymy of *Pl. australis*.

Pl. eatoni McL. and *N. magalhaensis* Kbg. were established as synonyms by Ehlers (1901). Willey (1904) recognises *Pl. striata* Schm. and *Mastigonereis striata* Schm. as identical. Augener (1913) describes *M. striata* and *M. quadridenta* Schm. as synonymous with *Pl. australis* Schm. In 1909, Benham established a case for the synonymy of *Pl. australis* and *Pl. eatoni*. Thus the above-named species may be considered as synonymous and members of the one species.

Synonymy of *Pl. dumerili*.

Later there is further synonymy suggested by the relations of *Pl. dumerili* Aud. and Ed., Izuka (1912) and Marenzeller (1879) believe that *Pl. agassizi* Ehl. and *Pl. dumerili* Aud. and Ed. are synonymous and Izuka also adds *Pl. kubiensis* McL. to this synonymy. Augener (1927), however, maintains *Pl. agassizi* Ehl. is distinct from the two former. Monro (1933) reiterates previously-stated synonymy of *Pl. agassizi* and *Pl. dumerili* (he does not, however, give as reference Izuka 1912, Augener 1927, or Ramsay 1914). It seems, therefore, possible that since Izuka's and Marenzeller's specimen of

Pl. dumerili had the falcate appendix fused to the shaft, that their specimens were actually *Pl. agassizi* so great is the similarity in other respects. Then it follows that *Pl. agassizi* is a synonym of *Pl. kobiensis* McL., characterised by the presence of simple falcate setae in the dorsal bundle. *Pl. dumerili* is distinct in the presence of an articulated dorsal falcate bristle. Ramsay (1914) has summed up the position thus :—

“ *Pl. dumerili*, *Pl. kobiensis*, *Pl. agassizi* in the Pacific all have fused falcigers in the upper bundle, and the sole feature distinguishing them from *N. dumerili* of Atlantic coasts. No author has given any distinguishing features between Pacific forms. Isuka figures them all but gives no distinctions. It seems, therefore, that *Pl. agassizi* and *Pl. kobiensis* are merely geographic sub-species of *dumerili*, in which the falcate dorsal setae has become fused to a simple seta. Since Marenzeller figures a dorsal compound forced seta of a young Japanese specimen of *Pl. dumerili*, it seems that the species are definitely homologous and the fused seta only a modification to be found in the Pacific.”

Therefore in the compilation of the following key *Pl. agassizi* and *Pl. dumerili* are considered distinct forms.

Fauvel (1911) establishes a definite synonymy between *Pl. dumerili* and *Pl. insolita* Grav. and *Pl. pulchella* Grav.

Pl. bengalensis Kbg. is likened to *Pl. insolita* (Ehl. 1905). In his description of *Pl. bengalensis*, however, Willey states that it differs from *Pl. insolita* by the presence of a dorsal prominence on the dorsal falcate bristle. This throws a doubt on the synonymy of *Pl. dumerili* and *Pl. insolita* and suggests the identity if *Pl. bengalensis* with *Pl. dumerili*. This is supported by the comparison of parapodia of Willey's specimens of *Pl. bengalensis* with some of *Pl. dumerili* (Fauvel). The two are, however, distinguished by their pharynx.

Fauvel (1916) and Monro (1930), basing their argument on epitocous forms of the *Pl. dumerili* and *Pl. magalhaensis*, state that since the only difference in epitokes of the two species is a variation in the segments on which the epitocous parapodia commence, then the two forms are not to be separated. No explanation, however, is made of the absence of the dorsal falcate setae in the *Pl. magalhaensis*. Therefore, in compilation of the following key *Pl. australis* and *Pl. dumerili* with their synonyms have been retained as distinct forms. Day's species is probably *Pl. dumerili* Aud. and Ed. var. *australis* Day, but is not a synonym of *Pl. australis*.

Pl. abnormis Horst lacks paragnaths in Group III and has them in II, so Fauvel's (1932) key character for *Platynereis* must be modified since he distinguishes these species by the absence of paragnaths in Groups I, II and V. It seems advisable to distinguish the genera of family Nereidae by the form of paragnaths rather than by their arrangement.

PLATYNEREIS.

KEY TO SPECIES.

- | | | | | | |
|----|-----------------------------------|------|------|------|--|
| 1. | Without dorsal falcate setae | .... | .... | .... | 2 |
| | With dorsal falcate setae | .... | .... | .... | 4 |
| 2. | Prostomium not notched anteriorly | .... | .... | .... | 3 |
| | Prostomium notched anteriorly | | | | <i>Pl. arafurensis</i> McL.
(McL. 1885) |

Platynereis—continued.

3.	Paragnaths in areas I., II. ....	....	<i>Pl. polyscalma</i> Chamberlin (Fauvel 1932)	5
	Paragnaths not in areas I., II. ....	....		5
4.	Setose bristles in subacicular bundle ....	....	<i>Pl. australis</i> Schm. (Horst 1924)	
	No setose bristles in subacicular bundle ....	....	<i>Pl. cristatus</i> Horst (Horst 1924)	
5.	Some simple dorsal falcigerous bristles ....	....	<i>Pl. agassizi</i> Ehl. (Aug. 1927)	6
	Without simple dorsal falcigerous bristles ....	....		6
6.	Dorsal heterogomph falcate bristles ....	....	<i>Pl. tongatabuensis</i> McL. (McL. 1885)	7
	Dorsal falcate bristles homogomph ....	....		7
7.	Dorsal falcate bristles with dorsal prominence ....	....		8
	Dorsal falcate bristles without dorsal prominence ....	....		9
8.	Conical tentacles ....	....	<i>Pl. pulchella</i> Grav. (Monro 1936)	
	Cirriiform tentacles ....	....	<i>Pl. insolita</i> Grav. (Fauvel 1911)	
9.	Dorsal falcate setae exceed number of setose setae posteriorly		<i>Pl. hewitti</i> Day (Day 1934)	10
	Dorsal falcate setae always less than dorsal setigerous bristles			10
10.	Long cirrus in 7th parapodial segment ....	....	<i>Pl. abnormis</i> Horst (Fauvel 1932)	
	No long cirrus in 7th parapodial segment....	....		11
11.	Paragnaths in area IV. only ....	....	<i>Pl. bengalensis</i> Kbg. (Horst 1924)	
	Paragnaths in area IV. and other areas ....	....	<i>Pl. dumerili</i> Aud. & Edl. (Monro 1933)	

Platynereis dumerili Aud. and Ed.Monro 1933 *Pl. dumerili*.

Several hundred specimens, all small, obtained from submarine light hauls, from weed washings at Rottnest and Point Peron. Some from Jurien Bay, Nornalup and the Abrolhos.

They are identical in all ways with already published descriptions of *Pl. dumerili* except for the following feature—the dorsal homogomph falcate bristle is haired along its concave border. This has not before been recorded. Fauvel (1923) illustrates only denticles in this region.

Platynereis australis Schm.Augener (1913) *Pl. australis*.

Fewer specimens than *Dumerili* and larger. As described by Augener and others.

Genus **PERINEREIS**

KEY TO SPECIES

Fauvel (1919) and Horst (1924) have published Keys simplifying the identification of certain groups of Perinereid, in particular the identification of the sub-species of several variable species. (*P. cultrifera*, *P. nuntia*). The classification of this group is based largely on the pharynx, which is most variable. It has already been pointed out that the pharynx is an inde-

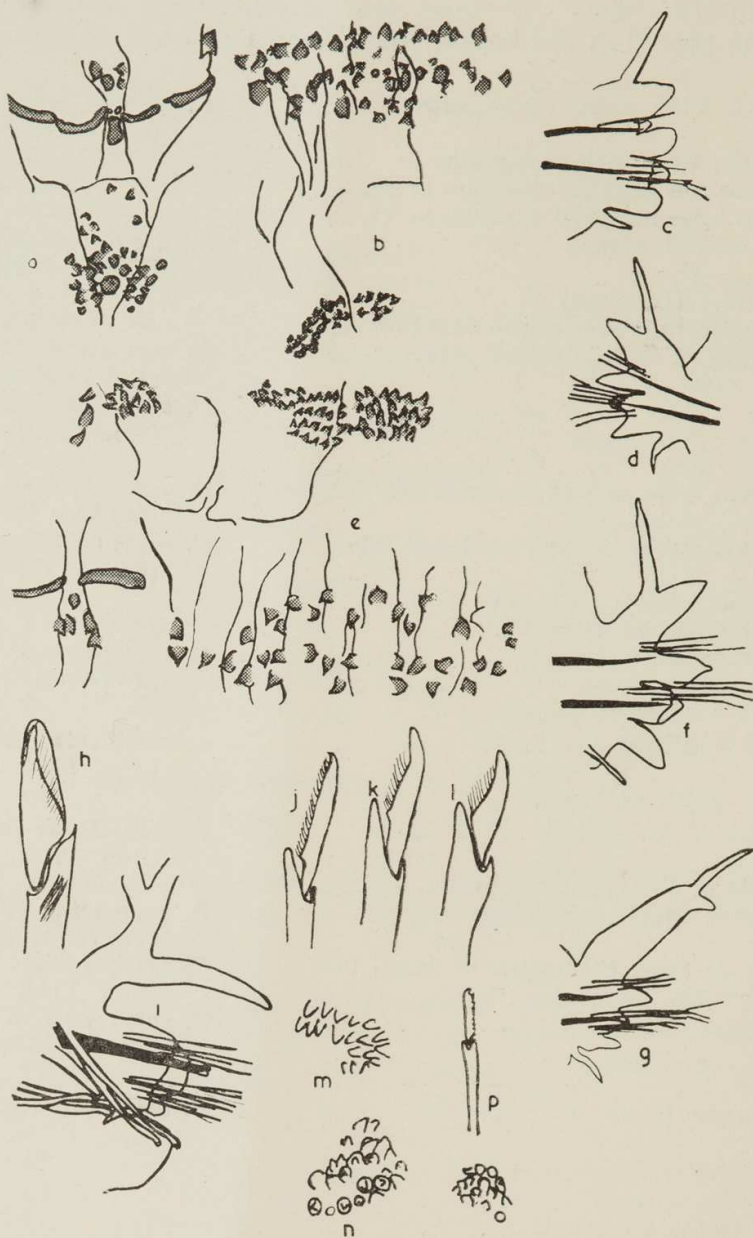
pendable character for classification. Since other factors, parapodia, setae, are constant in numbers of species, the pharynx is at present the only group on which a key can be based. It should, however, be borne in mind that a single transverse ridge on VI may very easily be broken up into two or more paragnaths (*e.g.*, *P. oliveirae*, see Fauvel, 1923). In such cases the species has been placed in the key in the group to which it usually conforms.

- | | | | | | |
|-----|--|------|------|---|----|
| 1. | Groups VII., VIII. without paragnaths | | | <i>P. saluana</i> Horst
(Fauvel 1932) | 2 |
| | Groups VII., VIII. with paragnaths.... | .... | .... |  | 3 |
| 2. | A transverse row of many denticles in VI. | .... | .... |  | 7 |
| | One or two large flattened denticles in VI. | .... | .... |  |  |
| 3. | Groups I. and II. absent | | | <i>P. neo-calendonica</i> Pruvot
(Fauvel 1932) | 4 |
| | Groups I. and II. present | .... | .... |  | 5 |
| 4. | 1-2 paragnaths in I. in a longitudinal row | | | <i>P. rumphii</i> Horst
(Horst 1924) | |
| | 5 paragnaths in I. in a round group | .... | .... |  |  |
| 5. | V. absent | | | <i>P. binongkae</i> Horst
(Horst 1924) | 6 |
| | V. present | .... | .... |  |  |
| 6. | Dorsal cirrus twice as long as dorsal lobe | | | <i>P. ponuiensis</i> Aug.
(Augener 1924) | |
| | Dorsal cirrus never as long as dorsal lobe | | | <i>P. nuntia</i> Savigny
(Fauvel 1919) | 8 |
| 7. | 2 transverse paragnaths in VI. | .... | .... |  | 12 |
| | 1 transverse paragnath in VI. | .... | .... |  |  |
| 8. | Single paragnath in V. | | | <i>P. singaporiensis</i> Grube
(Fauvel 1932) | 9 |
| | More than a single paragnath in V. | .... | .... |  |  |
| 9. | 2 rows of 3 in each row in V. | | | <i>P. variodentata</i> Aug.
(Aug. 1913) | 10 |
| | Triangular patch of 3 in V. | .... | .... |  |  |
| 10. | Paragnaths of VI. conical | | | <i>P. aibuhitensis</i> Grube
(Aug. 1913) | 11 |
| | Paragnaths of VI. broad, flattened | .... | .... |  |  |
| 11. | Dorsal cirrus equals dorsal lobe | | | <i>P. vancaurica</i> Ehl.
(Fauvel 1932) | |
| | Dorsal cirrus twice the length of dorsal lobe | | | <i>P. camiguinoides</i> Aug.
(Aug. 1924) | |
| 12. | V. missing | | | <i>P. cavifrons</i> Ehl.
(Fauvel 1932) | 13 |
| | V. present | .... | .... |  |  |
| 13. | V.—transverse group of 5 | | | <i>P. amblyodonta</i> Schm.
(Aug. 1913) | 14 |
| | V.—triangular patch of 3 or 1 | .... | .... |  | 16 |
| 14. | Posterior feet enlarged | .... | .... |  | 15 |
| | Posterior feet not enlarged | .... | .... |  |  |
| 15. | Middle lobe as long as dorsal lobe | | | <i>P. cultrifera</i> Grube
(Fauvel 1932) | |
| | Middle lobe only two-thirds as long as dorsal lobe | | | <i>P. obfuscata</i> Grube
(Horst 1924) | |
| 16. | Oval mass of small black points in 1 | | | <i>P. falklandica</i> Ramsay
(Ramsay 1920) | 17 |
| | Triangular group in 1 | .... | .... |  |  |
| | 1-7 in a cluster in 1 | | | <i>P. nigropunctata</i> Horst
(Horst 1924) | |
| 17. | Peristomial cirri reach back beyond 7th segment | | | <i>P. bairdii</i> Webster
(Monro 1933) | |
| | Peristomial cirri does not reach back beyond 5th segment | | | <i>P. oliveirae</i> Horst
(Fauvel 1923) | |
| | Of <i>P. dongalae</i> Horst (1924) there was insufficient information for inclusion in this key. | | | | |

Perinereis variodentata Augener.

(Text fig. 6 a-g.)

Augener 1913

P. variodentata.

Text Fig. 6.

Perinereis variodentata Aug.

a, b—pharynx; c—anterior parapodium; d—posterior parapodium.

P. amblyodonta Schm.

e—pharynx; f—anterior parapodium; g—posterior parapodium.

Eunice denticulata Webster.

h—anterior compound seta; i—55th parapodium.

Ceratonereis costae Grube.

j—anterior supra acicular falcate seta; k—middle supra acicular falcate seta; l—posterior supra acicular falcate seta.

C. tentaculata Kgl.

m—Group II of pharynx; n—Group III of pharynx; o—Group IV of pharynx; p—dorsal falcate seta.

Two specimens from Point Peron, five from Nornalup. Size.—20-25 mm. long, 2 mm. broad ; approximately 70 segments. Colour in alcohol a whitish pink.

Prostomium and its appendages as described by Augener (1913).

Pharynx agrees in general with Augener's description but certain frequent variations in the few available specimens have been observed (text fig. 6 a, b).

1. Frequently richly supplied with paragnaths of varying sizes and irregularly arranged, covering the whole of Area I, or fewer paragnaths of regular size, sometimes arranged asymmetrically but in one specimen there are three paragnaths arranged in a triangle with the apex anteriorly directed.
- III. Three in a T.S. line.
- V. In one specimen there are the two curved rows as described by Augener but in three other specimens two lateral paragnaths of the posterior row were missing. Frequently the median paragnath of this row was greatly elongated longitudinally (see Pl. VIII, fig. 1).

Parapodia (text fig. 6 c, d) as described by Augener.

Setae differs slightly from Augener's descriptions :

These specimens contain homogomph and heterogomph spinigerous seta in the supra and sub-acicular bundles respectively of the ventral division in all segments with the exception of the first few anterior segments, where the ventral spinigerous seta is missing.

I could find no supra acicular homogomph falcigerous seta recorded by Augener (1913) for this species.

***Perinereis amblyodonta* Schm.**

(Text fig. 6 e-g.)

Augener 1913 *P. amblyodonta* Schm.

Six specimens from Point Peron. Size 25-35 mm., four mm. broad.

Prostomium, *prostomial appendage*, *peristomial cirri* as described by Augener.

Pharynx (text fig. 6 e) with narrow, elongate and pointed paragnaths in the maxillary ring and shorter, fewer paragnaths in the oral ring.

Parapodia (text fig. 6 f, g) with marked glandular patches in all lobes on the parapodia. *Setae*.—Falcate setae curved, haired basally (see those in ventral bundle of *N. callaona*). The appendix of spinigerous bristles three times the length of the falcate appendix and former is haired all along its length. There are no falcate bristles in dorsal bundle and heterogomph falcigers only in the sub acicular bundle.

Fam. **EUNICIDAE.**Genus **EUNICE.**

The classification of this genus is, as is the case with other groups of Nereidiforma, confused by the variability of features used. As with other genera, the most dependable characters were the seta. The value of gill arrangement and numbers in classification is doubtful, due to the wide variation which these organs undergo within a species; and due to the fact that in some younger forms the gills in some parts of the body have not yet appeared. Within certain limits, however, the gills do give an indication of the groups to which any species belongs (Crossland 1924) and with other morphological details (*e.g.*, setae) are useful characters for identification. The key which follows has been modified mainly from Fauvel (1932) to include a wider number of species recorded.

The groupings of Crosslands key (1904) were not used since the divisions were most arbitrary, and based on extremely variable and overlapping characters, such as the length of tentacles and assymetry of the jaws.

KEY TO SPECIES.

- | | | |
|-----|--|--|
| 1. | Gills commence beyond 10th parapodial segment | 2 |
| | Gills commence before 10th parapodial segment | 14 |
| 2. | No acicular or pectinate setae | 3 |
| | Pectinate or acicular setae present | 4 |
| 3. | Mandibles enormously developed | <i>E. cariboea</i> Grube
(Treadwell 1921) |
| | Mandible of average size | <i>E. sicilensis</i> Grube
(Monro 1933) |
| 4. | Gills continue to anal segments | 5 |
| | Gills cease posteriorly | 12 |
| 5. | More than 4 filaments in gills | 7 |
| | Not more than 4 filaments in gills | 6 |
| 6. | Gills commence beyond 80th segment | <i>E. tenuis</i> Tread.
(Treadwell 1921) |
| | Gills commence between 60th and 70th segment.... | <i>E. schizobranchia</i> Clap.
(Fauvel 1923) |
| | Gills commence between 15th and 20th segments | <i>E. afra</i> Peters
(Monro 1933) |
| 7. | Gills commence at segment 80 | <i>E. gracilis</i> Crossland
(Fauvel 1932) |
| | Gills commence before segment 40 | 8 |
| 8. | Gills of one filament | <i>E. guanica</i> T.
(Treadwell 1921) |
| | Gills of more than one filament | 9 |
| 9. | Filaments increase in number posterior | 10 |
| | Filaments reduced to one posterior | <i>E. denticulata</i> Webster
(Treadwell 1921) |
| 10. | Gills commence segment 20 | <i>E. bucciensis</i> Treadwell
(Treadwell 1921) |
| | Gills commence segment 27-30 | 11 |
| 11. | Gills increase to 3 filaments posterior | <i>E. spongicola</i> T.
(Treadwell 1921) |
| | Gills increase to 2 filaments posterior | <i>E. filamentosa</i> Grube
(Monro 1933) |
| 12. | Gills commence beyond segment 20 | <i>E. cariboea</i> Grube
(Monro 1933) |
| | Gills commence before segment 20 | 13 |

13.	Maximum of 3 filaments developed in middle body	<i>E. notata</i> T. (Treadwell 1921)	
	Maximum of 2 filaments developed posteriorly in body	<i>E. prognatha</i> (McI. 1885)	
14.	Gills continue to anal segments		15
	Gills cease before anal segments		26
15.	Not more than 4 filamentous gills		16
	Not less than 4 filamentous gills		19
16.	Constant number of gill filaments		17
	Number of gill filaments increases		18
17.	Gills arise from base of trunk ; not bifid	<i>E. tribranchiata</i> McI. (McI. 1885)	
	Gills do not arise from base of trunk ; are bifid	<i>E. equibranchiata</i> McI. (McI. 1885)	
18.	In middle body dorsal cirrus not longer than gills	<i>E. mutilata</i> Webster (Treadwell 1921)	
	In middle body dorsal cirrus is longer than gills	<i>E. mindanavensis</i> McI. (McI. 1885)	
19.	Palps bilobed ; prostomium quadripartite		20
	Palps not bilobed ; prostomium bilobed		24
20.	Gills commence 3rd-7th feet		21
	Gills commence 8th-10th feet		23
21.	Tentacular cirru articulate	<i>E. tentaculata</i> Aug. (Monro 1933)	
	Tentacular cirri smooth		22
22.	Compound setae with terminal piece sword-shaped anteriorly, sichel-shaped	<i>E. tubifex</i> Crossland (Fauvel 1932)	
	Compound setae with all terminal pieces sichel-shaped	<i>E. floridana</i> Pourtales (Fauvel 1932)	
23.	Maximum 15 filaments	<i>E. longisetis</i> Webster (Treadwell 1921)	
	Maximum 30 filaments	<i>E. aphroditois</i> Pallas (Monro 1933)	
24.	Acicular setae tridentate posteriorly	<i>E. antennata</i> Savigny (Monro 1936)	
	Acicular setae not tridentate posteriorly		25
25.	Maximum of 8 filaments	<i>E. grubei</i> Gravier (Fauvel 1932)	
	Maximum of 12 filaments	<i>E. magellanica</i> McI. (McI. 1885)	
26.	Prostomium lobed		27
	Prostomium not lobed	<i>E. vittata</i> Delle Chiaj (Monro 1933)	
27.	Branchia commence 3rd-4th feet		28
28.	Prostomium bilobed		29
	Prostomium quadripartite		33
29.	Head as broad as body		30
	Head not as broad as broadest part of body		31
30.	Tentacles annulated	<i>E. australis</i> Qfgs. (Fauvel 1932)	
	Tentacles not annulated	<i>E. tridentata</i> Ehl. (Monro 1933)	
31.	Acicular setae tridentate		32
	Acicular setae bidentate	<i>E. indica</i> Kbg. (Monro 1933)	
32.	Tentacles articulate	<i>E. savignyi</i> Grube (Fauvel 1932)	
	Tentacles not articulate	<i>E. longicirrata</i> Webster (Monro 1933)	

Fauvel (Mem. Ind. Mus. 1933 p. 132-4)
Incorrect!
E. aphroditois may
commence 3 to 8th

- | | | | | | | |
|-----|---|------|------|------|------|---|
| 33. | Peristomium narrow | | | | | <i>E. kobiensis</i> McL.
(McL. 1885) |
| | Peristomium as broad as following segment | .... |  |  |  | 34 |
| 34. | Compound setae bidentate | | | | | <i>E. pennata</i> Muller
(Fauvel 1923) |
| | Compound setae not dentate | | | | | <i>E. fucata</i> Ehl.
(Treadwell 1921) |

The species, purely European, *E. harassi*, *E. oerstedii*, *E. torquata*, included in key published by Fauvel (1923) have been omitted from this key.

Eunice antennata Savigny.

Monro 1936

E. antennata.

Approximately 200 specimens from all stations. Size 10-65 mm. long, 1-5 mm. broad, 70-110 segments. Living specimens green with dorsally a white spotted band on the first setigerous segment (Augener 1913). On the buccal segment dorsally there is a spotted white triangle and similar round patches of white spots extend along the mid-dorsal line in each segment. These latter mid-dorsal white circular areas are indistinct in the first three segments but become more distinct posteriorly. In some specimens white areas are replaced by brown pigment. There is a brown band around the intersegmented constriction of segmented appendages. Specimens in alcohol are pinkish white to brownish pink and retain the white areas.

Prostomium notched to half its length anteriorly. *Palps* grooved ventrally presenting two marginal lobes. *Prostomial tentacles* jointed moniliform. In one specimen jointing only evident basally, nuchal segment bears two moniliform cirri extending slightly beyond the ridge of the buccal segment. *Eyes* round, black, at base of outer paired tentacles.

Pharynx sometimes white calcareous incrustations on edge of jaws. Number of teeth show much variation as:—

$$\begin{array}{rclclcl}
 8 & - & 8 & : & 6 & + & 5 & - & 8 \\
 6 & - & 6 & : & 7 & + & 9 & - & 8 \\
 7 & - & 5 & : & 7 & + & 6 & - & 7
 \end{array}$$

Parapodia.—Dorsal cirrus is jointed, anteriorly 5-6 segments, 3-4 posteriorly; in anterior segments half as long as gill filaments; posteriorly the same length as the gills. Ventral cirrus on first seven segments is pyriform. In the following 20 segments the base is elongate, sausage-like; its base is applied to the body wall; further posteriorly it is finger-like. Gills commence invariably at segment 5 with 1-3 filaments. Maximum development of 6-12 filaments at about segment 20. Number and length of filaments thereafter reduced to 1-3 filaments until in the posterior body third is a slight increase in number (but not in length) to 2-4 filaments respectively. Longest gills anteriorly reach the mid-dorsal line. Gills absent in last three segments. Longest filaments arise mostly proximally from common stalk. *Setae*.—Two aciculae either side of a group of simple pectinate and spinigerous setae. Ventrally are compound bidentate setae sometimes with a third tooth posteriorly, and bidentate acicular seta, tridentate posteriorly and sometimes absent anteriorly. The aciculae (Crossland 1904) sometimes bidentate. Anal cirri.—6-8 segments.

Young forms.—Joints of moniliform appendages indistinct, no increase in length of gills posteriorly and palps viewed dorsally appear to be fused medially. There is a tendency to asymmetry in commencement of gills on different segments either side ; bifid or trifid gills and occasionally bifid dorsal cirri.

***Eunice denticulata* Webster.**

(Text fig. 6 h, i.)

Treadwell 1921

E. denticulata.

Five large specimens were taken from Rottnest and Point Peron. Some specimens were taken in tubes (Treadwell 1921). Colour of the preserved specimens varied from greyish white to pinkish white.

One relatively small specimen only was complete, and measures 80 x 5 mm. There are two large samples consisting of the hind end only, measuring 160 x 10 mm. and 90 x 10 mm. and two similar specimens represented by the anterior end of the body only.

Prostomium, as represented by a pair of palps, projects anteriorly only as far as half the length of the peristomium and is cleft deeply to the anterior border of the peristomium. There is no ventral groove visible on the palps. The origin of the prostomial tentacles is hidden by the overlapping peristomium. They are short, the median tentacle slightly longer than the peristomium and the inner and outer pair progressively shorter. The inner pair of tentacles arise in line with the origin of the median, the outer pair arise more posteriorly with a round black eye with a lens at their base and lateral to the base of the inner pair of tentacles. The tentacles are smooth, show no trace of annulation or jointing ; similarly the nuchal and dorsal cirri.

The body segments of the anterior and broadest part of the body are about eight times as broad as their length.

Parapodia are as described by Treadwell for *Eunice denticulata* (1921). The *gills*, commencing constantly from segment 23, are in the region of their greatest development at least three times the length of the dorsal cirrus. Posteriorly in the smaller and complete specimen, the single gill filament may be reduced to the length of the dorsal cirrus, unlike the condition in the larger incomplete hinder fragments where the single gill filament posteriorly becomes shorter than the dorsal cirrus as described by Treadwell (1921). The smaller specimen has throughout relatively larger gills than the large samples. In the specimens of this collection the number of filaments may be up to four. *Setae* posteriorly are also similar to those described by Treadwell ; anterior compound setae (text fig. 6 h) with a longer appendix, less prominently dentate and without the basal tooth of the posterior setae. The aciculae and acicular setae are distinctive and more numerous than those previously described (text fig. 6 i). Anteriorly there are two aciculae, one dark brown, the other reddish brown. Dorsal to these are the simple winged setose setae and pectinate setae and ventrally are the compound setae. Both the simple and compound setae are a pale yellow colour. At about the 20th segment the reddish

brown aciculum has become deeply embedded in the muscle of the parapodium and ventral to the remaining protruding seta there appears, also of reddish brown colour, and embedded in the parapodium, another aciculum. The three aciculae are thick. At about the thirty-fifth parapodium two ventral bidentate hooded acicular setae have been added, as described from the posterior parapodia by Treadwell, and the ventral aciculum has become bifid terminally. At the fiftieth parapodium (text fig. 6 i) three more bidentate acicular setae have been added. Further posteriorly the setigerous lobes contain compound falcigerous bristles, simple setose and pectinate bristles, one acicular seta and one black aciculum which has acquired a curved tip and dentate guard (*see* Treadwell 1921, fig. 49).

Pharynx.—The jaws are black; the mandible with minute denticulations along the terminal edge; forceps strongly curved.

Formula for teeth on maxillary plates as follows:—4 —3 : 4 + 2 — 6, which is identical with Treadwell's description of the pharyngeal armature of *E. denticulata* Webster.

Eunice siciliensis Grube.

Monro 1933 *E. siciliensis*.

One specimen collected from Rottneet. It is 100 mm. in length and 5 mm. broad, inclusive of the parapodia. The colour of the preserved specimen is whitish grey speckled all over with white, particularly in the anterior region.

Prostomium is cleft only ventrally, is speckled with brown and carries two round black eyes which are not hidden by the overlapping peristomium. The tentacles are jointed, not quite moniliform and are slightly longer than the peristomium. The peristomium and nuchal segments are of equal length, slightly longer than the other body segments. The body segments are twelve times as broad as their length.

Parapodia are situated more or less ventrally. The gills, beginning on segment 100, are of a single filament throughout.

Genus **MARPHYSA**.

Treadwell (1922) has described a new species of *Marphysa* with a specific name "*simplex*" preoccupied by Crossland (1903). Treadwell's specimen had tentacles twice the length of the prostomium; no compound setae; simple setose setae, long and tapering with marginal denticulations; anterior pectinate setae; ventral acicular setae with terminal and subterminal teeth and a hood. I could find no distinction in the description of Treadwell's *M. simplex* and *M. mossambica* Peters.

It is hard to understand how Treadwell could have overlooked *M. simplex* Crossland since Treadwell refers to *M. macintoshi* first described by Crossland in the same publication as he recorded *M. simplex*.

KEY TO SPECIES.

Other keys published by Crossland (1903) and Fauvel (1932)—

1.	Prostomium undivided	2
	Prostomium bifid	6
2.	Gills large, confined to a few anterior segments	3
	Gills extend over most of body length	5
3.	No spinigerous setae present	<i>M. adenensis</i> Grav. (Day 1934)
	Spinigerous setae present	4
4.	Only spinigerous setae anteriorly	<i>M. strangulum</i> Grube (Fauvel 1932)
	Both spinigerous and falcigerous setae anteriorly	<i>M. bellii</i> Aud. & Ed. (Treadwell 1921)
5.	Compound setae knife-shaped	<i>M. Macintoshi</i> Crossland (Day 1934)
	Compound setae hooked	<i>M. bifurcata</i> n. sp.
6.	No compound setae present	<i>M. mossambica</i> Peters (Day 1934) Syn. <i>M. simplex</i> Tread.
	Compound setae present	7
7.	Compound setae absent in anterior and posterior parts of body	<i>M. graveleyi</i> Southern (Fauvel 1932)
	Compound setae present throughout body	8
8.	Compound setae spinigerous or knife-like only	9
	Compound setae falcigerous only	16
	Compound setae both spinigerous and falcigerous	20
9.	Tentacles shorter than the prostomium	<i>M. brevitentaculata</i> (Treadwell 1921)
	Tentacles longer than the prostomium	10
10.	Tentacles less than twice length prostomium	11
	Tentacles at least twice length prostomium	14
11.	Acicula setae not dentate	12
	Acicula setae dentate	13
12.	Gills maximum of 3 filaments	<i>M. simplex</i> Crossland (Crossland 1903)
	Gills maximum of 5-6 filaments	<i>M. parishii</i> Baird (Treadwell 1921)
13.	Gills begin about segment 20	<i>M. californica</i> Moore (Treadwell 1921)
	Gills begin about segment 30	<i>M. nobilis</i> T. (Treadwell 1921)
14.	Ventral acicula setae dentate	<i>M. viridis</i> T. (Treadwell 1921)
	Ventral acicula setae not dentate	15

15.	Gills commence before segment 20	....	....	....	<i>M. sanguinea</i> Montague (Day 1934)
	Gills commence after segment 20	....	....	....	<i>M. durbanensis</i> Day (Day 1934)
16.	Tentacles greater than twice prostomium	....	....	....	<i>M. goodsiri</i> McL. (McL. 1885)
	Tentacles less than twice prostomium	....	....	....	17
17.	Gills of one or 2 filaments only	....	....	....	18
	Gills of more than 1 or 2 filaments only	....	....	....	19
18.	....	....	....	....	<i>M. capensis</i> Schm. (Day 1934)
					<i>M. saxicola</i> Langerhans (Crossland 1903)
19.	Toothed acicular seta	....	....	....	<i>M. corallina</i> Kbg. (Day 1934)
	Acicular seta not toothed	....	....	....	<i>M. regalis</i> Verrill (Treadwell 1921)
20.	Gills commence beyond segment 30	....	....	....	21
	Gills commence before segment 30	....	....	....	22
21.	Gills commence at about 60th segment	....	....	....	<i>M. languida</i> Treadwell (Treadwell 1921)
	Gills commence at about 40th segment	....	....	....	<i>M. depressa</i> Schm. (Aug. 1924)
22.	Prostomium only a shallow cleft	....	....	....	<i>M. fallax</i> Marion (Fauvel 1923)
	Prostomium deeply emarginated	....	....	....	<i>M. chevalensis</i> Willey (Aug. 1924)

Marphysa sanguinea Montagu.

Day 1934 *M. sanguinea*.

Three specimens only collected from some rock washings at Point Peron. The largest specimen measures 110 mm. in length and is 5 mm. broad. Two other specimens small and incomplete posteriorly are 1-2 mm. broad.

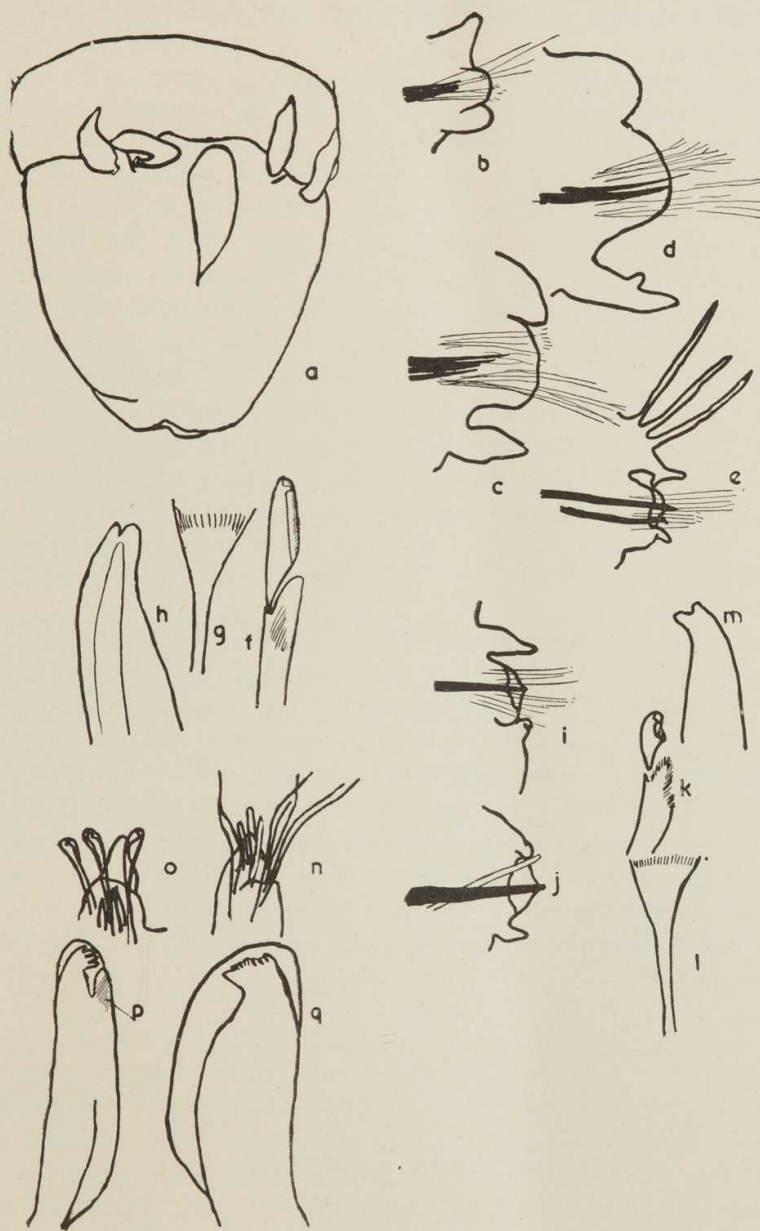
They are brownish pink in colour, convex slightly ventrally and almost flat dorsally, with the greater distance between the parapodia of the two sides on ventral surface. The gills commence on segment 18 and attain a maximum of four filaments. The prostomium and tentacles are similar to those described by Crossland (1903). The median tentacle, however, in the specimens under discussion, is longer and is about twice the length of the prostomium. The parapodia and setae are identical with Crossland's specimens from East Africa, with dimorphous pectinate setae posteriorly exhibiting the typical comb lime form.

The mandibles are black and tipped with white; the forceps strongly curved. Teeth on the maxillary plates are fewer than has previously been recorded as follows:—

$$3 - 4 : 4 + 3 - 4$$

Marphysa bifurcata n. sp.

(Text fig. 7a-h.)



Text Fig 7.

Marphysa bifurcata n. sp.

a—head; b—1st parapodium; c—6th parapodium; d—17th parapodium; e—posterior parapodium; f—compound seta; g—pectinate seta; h—acicular seta.

Lysidice collaris Grube.

i—anterior parapodium; j—posterior parapodium; k—compound seta; l—anterior pectinate seta; m—acicular seta.

Lumbriconereis jacksoni Kbg.

n—anterior parapodium; o—posterior parapodium; p—anterior acicular seta; q—posterior acicular seta.

One specimen collected from the sheltered north reef at Point Peron. Colour of the preserved specimen is brownish grey with iridescent cuticle. Size 60 mm. in length, 3 mm. broad, and contains 130 segments. A small portion of the posterior end, however, is missing. The body anteriorly is cylindrical, but becomes flattened dorsally and convex ventrally as in *M. sanguinea* Montagu.

Prostomium (text fig. 7 a) bears no trace of indentation but is more pointed than that figured by Crossland for *M. macintoshi* although this effect may be partly due to shrinking of tissues in the preserving fluid. The prostomial tentacles are very small, the median the longest and the inner and outer pair progressively smaller, but they all reach forward to one-third the length of the prostomium since they are arranged in an arc with concavity directed anteriorly. They are smooth and neither jointed nor annulated. Lateral to the base of the inner pair of tentacles and set obliquely between these and the outer pair is a line of brown pigment, in the position where the eyes are usually found. The *buccal segment* is about half the length of the prostomium and as wide as the following few anterior segments of which it is twice as long. This anterior part of the body has a cylindrical cross section, apparently maintained by the pharynx, but it soon acquires the flattened dorsal surface.

The *gills* commence on segment 22 with a single filament half the length of the dorsal cirrus. The number of filaments and their length increase until segment 27, where there are three filaments as long as the dorsal cirrus. There is a maximum of five slender filaments in the region of the 50th segment, where the filaments are also longer and reach to the mid-line dorsally. Further posteriorly the body width has been reduced, but the gill filaments retain their maximum development and so reach well over the mid dorsal line from either side. The terminal segments of this sample show no reduction in length or number of filaments. The gill filaments arise along the base of the dorsal cirrus independently of one another (text fig. 7 e). The dorsal cirrus is also distinctive.

Parapodia.—The first parapodium (text fig. 7 b) bears a conical dorsal cirrus slightly longer than and widely separated from the setigerous lobe and ventral cirrus, which is as long as the setigerous lobe. At the sixth parapodium (text fig. 7 c) the setigerous lobe and ventral cirrus are wider and more rounded and the dorsal cirrus finger-like. At the seventeenth parapodium (text fig. 7 d) the slight prominence which is seen on the inner side of the dorsal cirrus starts to increase in length. This continues, and the dorsal cirrus from about the twentieth parapodium to the end of the body is bifurcate (text fig. 7 e). The ventral cirrus becomes longer and thinner but still arises from a broad base. The ventral cirrus is at all stages practically confluent with the setigerous lobe, and in the posterior segments is particularly hard to distinguish from the setigerous lobe. *Setae* (text fig. 7 f-h). The simple capillary setae found dorsally are long, very slightly curved, with a thin wing either side and tapering gradually to a long point. The simple setae in the ventral part of the group are very much shorter. About the middle of the body pectinate setae of general type were added to this group. Ventrally the compound setae are bidentate throughout and protected by a striated hood. The supporting aciculae are black anteriorly

and number four in the sixth parapodium. At the twentieth their number has been reduced to two and they are coloured a lighter brown. There is later added a ventral bidentate acicular seta of the same thickness as the aciculae. At the posterior end of the body there is only one aciculum and one acicular seta.

Pharynx.—The jaws a dark brown colour. The mandibles are similar to those of *M. macintoshi* Crossland. The teeth on maxillary plates are as follows :— 3 — 4 : 5 + 4 — 6.

Genus **LYSIDICE**.

KEY TO SPECIES.

As far as I can ascertain there have been no other keys to this species published.

- | | | | | |
|----|--|------|------|--|
| 1. | Tentacles shorter than prostomium | .... | .... | 2 |
| | Tentacles as long or longer than prostomium | .... | .... | 3 |
| 2. | With black aciculum and acicular setae | | | <i>L. capensis</i> Grube
(Ehlers 1908) |
| | With yellowish aciculum and acicular setae | | | <i>L. brevicornis</i> Kbg.
(Augener 1927) |
| 3. | Only one aciculum in the parapodia and no acicular setae present | | | 4 |
| | Dentate acicular setae present | .... | .... | 5 |
| 4. | Prostomium equals the length of peristomium | | | <i>L. parva</i> T.
(Treadwell 1922) |
| | Prostomium three times the length of peristomium | | | <i>L. torquata</i> T.
(Treadwell 1921) |
| 5. | Prostomium with a deep cleft | .... | .... | 6 |
| | Prostomium with a shallow cleft | .... | .... | 7 |
| 6. | Tentacles jointed | | | <i>L. trimera</i> Ehl.
(Ehlers 1901) |
| | Tentacles not jointed | | | <i>L. fusca</i> T.
(Treadwell 1922) |
| 7. | Mid tentacle arises behind others | | | <i>L. notata</i> Ehl.
(Treadwell 1921) |
| | Mid tentacle arises in front of others | | | <i>L. collaris</i> Grube
(Monro 1936) |

Lysidice calloris Grube.

(Text fig. 7 i-m.)

Monro 1936 *L. collaris*.

Thirty specimens were collected from rock and weed washings at Point Peron, Rottnest and Pelsart Group, Abrolhos. Colour in alcohol pinkish brown to white ; some are covered with a white fleck. Size from 30–40 mm. in length and about 2 mm. broad. Smaller specimens are 15–20 mm. long.

Prostomium, *buccal segment*, and *anterior body segments* are of equal length and breadth in specimens with invaginated proboscis. Where the pharynx is partly evaginated the buccal segment is narrower than the prostomium and anterior parapodia. The prostomial tentacles are slightly longer than the prostomium which has a shallow cleft anteriorly extending back along the ventral surface. The median tentacle varies in length ; usually

it is only slightly longer than the outer paired tentacles but in one specimen it is considerably longer and in several other specimens, all with the pharynx partly extruded, the median tentacle is about half the length of the prostomium. The tentacles are jointed and flattened, dorso-ventrally. The eyes are of characteristic semi-lunar shape (Augener 1913) and are borne at the base of the outer pair of tentacles.

Parapodia and *setae* typical of the species.

Setae.—Pectinate setae posteriorly are more plentiful and exhibit longer teeth. The setae and aciculae are a yellow colour.

Pharynx.—The jaws are brown with a white calcareous coat, especially thick on the mandibles. The teeth of the distal paired plates are very small denticulations and not very easily observed. The number of teeth on the dental plates is fairly constant in the specimens examined:—

$$4 - 4 : 2 + 3 - 4 \text{ or } 5.$$

Genus **LUMBRICONEREIS**.

KEY TO SPECIES.

Fauvel (1923, 1932) and Crossland (1924) have published keys to this genus, from which the following has been adopted.

1.	With compound setae	....	....	....	....	2
	Without compound setae	....	....	....	....	12
2.	With globular or rounded head	....	....	....	....	3
	With conical head	....	....	....	....	7
3.	With very few setae and a median ventral furrow on the prostomium	<i>L. macquariensis</i> Benham (Benham 1921)				4
	Average number of setae and without a median ventral furrow					4
4.	Dorsal surface of parapodial lobes horizontal	....	....	....	....	5
	Ventral surface of parapodial lobes horizontal	....	....	....	....	6
5.	....	....	....	....	....	<i>L. floridana</i> Ehl. (Treadwell 1921)
						<i>L. coccinea</i> Ehl. (Willey 1904)
6.	Prostomium longer than broad	....	....	....	....	<i>L. sphaerocephala</i> Schm. (Monro 1933)
	Prostomium broader than long	....	....	....	....	<i>L. albifrons</i> C. (Crossland 1924)
7.	Enlarged posterior setigerous lobe conical	....	....	....	....	8
	Enlarged posterior setigerous lobe cylindrical	....	....	....	....	11
8.	Anterior and posterior setigerous lobes conical	....	....	....	....	<i>L. gracilis</i> Ehl. (Fauvel 1923)
	Posterior setigerous lobe conical, anterior lobe rounded					9
9.	No aciculae anteriorly, aciculae present throughout	<i>L. nuchalis</i> T. (Treadwell 1921)				10
	Aciculae present throughout	....	....	....	....	10

10.	Small serrations on compound setae	....	....	<i>L. magalhaensis</i> Kbg. (Benham 1921)
	Larger serrations on compound setae	....	....	<i>L. latreilli</i> Aud. & Ed. (Monro 1933)
11.	....	....	....	<i>L. paucidentata</i> T. (Treadwell 1921)
				<i>L. bidens</i> Ehl. (Ehlers 1887)
12.	No hooked setae present	....	....	<i>L. pseudobifilaris</i> Fauvel (Fauvel 1932)
	Hooked setae present	....	....	13
13.	With gills	....	....	<i>L. branchiata</i> T. (Treadwell 1921)
	Without gills	....	....	14
14.	With rounded globular prostomium	....	....	15
	With conical or oval prostomium	....	....	19
	With accentuated prostomium	....	....	<i>L. acutifrons</i> McI. (McI. 1910)
15.	Anterior and posterior lobes either side of setigerous lobe	....	....	<i>L. cingulata</i> T. (Treadwell 1921)
	Only posterior and setigerous lobes	....	....	16
16.	Posterior lobe flattened posteriorly	....	....	<i>L. heteropoda</i> Marenz (Crossland 1924)
	Posterior lobe not flattened posteriorly	....	....	17
17.	Mandibles very long	....	....	<i>L. mando</i> Cross. (Crossland 1924)
	Mandibles not very long	....	....	18
18.	About 10 teeth on hooked seta	....	....	<i>L. mirabilis</i> Kbg. (Augener 1922)
	About 4 teeth on hooked seta	....	....	<i>L. jacksoni</i> Kbg. (Augener 1922)
19.	Posterior lobes not produced into long, finger-like processes	....	....	<i>L. abyssorum</i> McI. (McI. 1885)
	Posterior lobes produced into finger-like processes	....	....	20
20.	Anterior and posterior lobes produced to equal extent posteriorly	....	....	<i>L. bifurcata</i> McI. (McI. 1885)
	Posterior lobe produced to greatest extent posteriorly	....	....	21
21.	Elongate posterior lobe double	....	....	22
	Elongate posterior lobe single	....	....	23
22.	Both posterior lobes tapering	....	....	<i>L. bifilaris</i> Ehl. (Fauvel 1932)
	One posterior lobe papilliform	....	....	<i>L. papillifera</i> Fauvel (Fauvel 1919)
23.	Hooks and capillary setae continue to posterior end	....	....	<i>L. punctata</i> McI. (McI. 1885)
	Hooks only continue posteriorly	....	....	24
24.	No hooks anteriorly before the 30th parapodium	....	....	25
	Hooks and capillaries anteriorly in about 1st-5th parapodium	....	....	27
25.	Acutely pointed prostomium	....	....	26
	Rounded prostomium	....	....	<i>L. guilielmi</i> Benham (Benham 1915)
26.	No black in aciculae	....	....	<i>L. tetraurus</i> Schm. (McI. 1903)
	Black in aciculae	....	....	<i>L. fragilis</i> Muller (Fauvel 1923)

27.	Head acutely pointed	....	....	....	....	<i>L. neo-zealandica</i> McL. (McL. 1885)	
	Head bluntly conical	....	....	....	....		28
28.	Feet increase in length posteriorly	....	....	....	....		29
	Feet shorter posteriorly	....	....	....	....	<i>L. debilis</i> Grube (Crossland 1924)	
29.	With hood on more than half protruding part of setae					<i>L. maculata</i> T. (Treadwell 1921)	
	Hoods on only terminal part of setae	....	....	....	....		30
30.	Hooks of anterior feet narrowest	....	....	....	....	<i>L. impatiens</i> Clap. (Fauvel 1923)	
	Hooks of anterior feet not narrowest	....	....	....	....	<i>L. brevicirra</i> Schm. (Monro 1933)	

There has been some question of synonymy between *L. jacksoni* Kbg. and *L. brevicirra* Schm. Augener (1913) has described specimens as *L. brevicirra*. Later, in 1922, he figures a hooked seta of *L. jacksoni* from S.W. Australia, remarking that it was previously identified as *L. brevicirra* although he does not mention that this was the form he described in 1913 as *L. brevicirra*. Benham 1927, believes they are synonymous. I find, however, on comparison of descriptions of these two forms, that there are certain differences; the anterior setigerous lobe of *L. brevicirra* is pointed while that of *L. jacksoni* is rounded; the prostomium of *L. jacksoni* is rounded while that of *L. brevicirra* is conical; *L. brevicirra* as described by Ehlers (1904) has nuchal organs, which are absent in *L. jacksoni*; and in *L. brevicirra* the two peristomial segments are not clearly divided (Crossland 1924).

Lumbriconereis jacksoni Kbg.

(Text fig. 7 n-q.)

Augener 1913	<i>L. brevicirra</i> .
Benham 1927	<i>L. brevicirra</i> .
Augener 1922	<i>L. jacksoni</i> .

Four specimens were collected from Rottnest, all of about 90 mm. in length and 3 mm. wide. Preserved specimens are a brownish white colour. They are as described by Augener (1913) for *L. brevicirra*. Prostomium is well rounded, as wide as its length without the nuchal organs described by Ehlers. The first and second peristomium segments are well separated and do not show the faint division mentioned by Crossland (1924) as typical of *L. brevicirra*.

Genus **STAURONEREIS**.

KEY TO SPECIES.

Crossland (1924) has published a key for identification of some of these species which has been incorporated into this key.

1.	No Eyes	....	....	....	....	....	<i>S. atlanticus</i> McL. (McL. 1885)	
	Eyes	....	....	....	....	....		2
2.	Has nuchal cirri	....	....	....	....	....		3
	Has no nuchal cirri	....	....	....	....	....		8
3.	Palps equal tentacles	....	....	....	....	....		4
	Palps greater than tentacles	....	....	....	....	....		6

4.	Shafts of compound setae denticulate	....	....	<i>S. crassa</i> Chamberlin (Chamberlin 1919)	5
	Shafts of compound setae not denticulate	....	....		5
5.	No terminal piece on dorsal cirrus	....	....	<i>S. gardineri</i> Cross. (Crossland 1924)	
	Has terminal piece on dorsal cirrus	....	....	<i>S. cerasina</i> Ehl. (Ehl. 1901)	7
6.	Shafts compound setae denticulate	....	....		7
	Shafts compound setae not denticulate	....	....	<i>S. australiensis</i> McI. (Fauvel 1917)	
7.	End piece of dorsal cirrus indistinctly separated	....	....	<i>S. rubra</i> Grube (Treadwell 1921)	
	End piece of dorsal cirrus a conical style	....	....	<i>S. moniloceras</i> Moore (Crossland 1924)	
8.	Forked setae present	....	....		9
	No forked setae present	....	....		13
9.	4 eyes	....	....		10
	2 eyes	....	....		11
10.	Tentacles shorter than palps	....	....	<i>S. longicornis</i> Ehl. (Ehlers 1901)	
	Tentacles almost twice as long as palps	....	....	<i>S. australis</i> Hasw. (Augener 1913) <i>S. loveni</i> Kbg. (Augener 1922)	
11.	Tentacles longer than palps	....	....	<i>S. pallidus</i> Langerhans (McI. 1910)	12
	Tentacles length of palps at most	....	....		12
12.	Forked bristle with arms of equal lengths	....	....	<i>S. kefersteni</i> McI. (McI. 1910)	
	Forked bristle with arms of unequal length	....	....	<i>S. ciliatus</i> McI. (McI. 1910)	
13.	More than one joint in dorsal cirrus	....	....	<i>S. melanops</i> Verrill (Treadwell 1921)	
	Only one terminal joint in dorsal cirrus	....	....	<i>S. vittata</i> Grube (Treadwell 1921) <i>S. similis</i> Cross. (Crossland 1924) <i>S. angolana</i> Aug. (Monro 1933)	

S. rubrovilattus is distinguished by the presence of a nuchal papilla and peculiar brush-like jaws.

Stauronereis australiensis McI.

Augener 1913 *S. australiensis*.

One specimen was collected from Rottnest. It is 3 mm. broad, excluding the parapodia, and 35 mm. long. It agrees in all details with Augener's description (1913).

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